

SEQUENCE LISTING

<110> HARRINGTON, JOHN J.
SHERF, BRUCE
RUNDLETT, STEPHEN

<120> COMPOSITIONS AND METHODS FOR NON-TARGETED ACTIVATION OF
ENDOGENOUS GENES

<130> 0221-0003M

<140> 09/513,575
<141> 2000-12-25

<150> 09/276,820
<151> 1999-03-26

<150> 09/263,814
<151> 1999-03-08

<150> 09/253,022
<151> 1999-02-19

<150> 09/159,643
<151> 1998-09-24

<150> 08/941,223
<151> 1997-09-26

<160> 33

<170> PatentIn Ver. 2.1

<210> 1
<211> 39
<212> DNA
<213> Homo sapiens

<400> 1
tccttcgaag cttgtcatgg ttggttcgct aaactgcatt

39

<210> 2
<211> 40
<212> DNA
<213> Homo sapiens

<400> 2
aaacttaaga tcgattaatc attcttctca tataacttcaa

40

<210> 3
<211> 28
<212> DNA
<213> Homo sapiens

<400> 3

atccaccatg gctacagggtg agtactcg

28

<210> 4
<211> 36
<212> DNA
<213> Homo sapiens

<400> 4
gatccgagta ctcacctgta gccatggtgg atttaa

36

<210> 5
<211> 33
<212> DNA
<213> Homo sapiens

<400> 5
ggcgagatct agcgctatac gcgttgatgc aat

33

<210> 6
<211> 51
<212> DNA
<213> Homo sapiens

<400> 6
ggccagatct gctacacctaa gagagccgaa acaagcgctc atgagccccga a

51

<210> 7
<211> 6084
<212> DNA
<213> Homo sapiens

<400> 7
agatctcaa tattggccat tagccatatt attcatttgt tatatacgat aaatcaatat 60
tggctattgg ccattgcata cgttgtatct atatcataat atgtacattt atattggctc 120
atgtccaata tgaccgcata gttggcattg attattgtact agttattaat agtaatcaat 180
tacggggtca ttagttcata gcccataat ggagttccgc gttacataac ttacggtaaa 240
tggcccgct ggctgaccgc ccaacgaccc cccgcattg acgtcaataa tgacgtatgt 300
tcccatagta acgccaatag ggacttcca ttgacgtcaa tgggtggagt atttacggta 360
aactgcccac ttggcagtag atcaagtgtt tcataatgcca agtccggcccc ctattgacgt 420
caatgacggt aaatggcccg cctggcatta tgcccagtagc atgaccttac gggactttcc 480
tacttggcag tacatctacg tattagtcat cgcttattacc atgggtatgc gggtttggca 540
gtacaccaat gggcggtggat agcggttga ctcacgggaa ttccaagtc tccaccccat 600
tgacgtcaat gggagtttgt tttggcacca aaatcaacgg gactttccaa aatgtcgtaa 660
caactgcgtat cggccgcggcc gttgacgcaa atggggcggtaa ggcgtgtacg gtggggaggc 720
tatataagca gagctcgaaa agtgaaccgt cagatcacta gaagctttat tgccgttagtt 780
tatcacagtt aaattgtcaa cgcaagtcaat gcttctgaca caacagtctc gaacttaagc 840
tgcagtgact ctcttaatata actccaccag tctcacttca gttccttttgc cctccaccag 900
tctcacttca gttccttttgc catgaagagc tcagaatcaa aagagggaaac caaccctaa 960
gatgagctt ccatgtaaat ttgttagccag cttcccttctg atttcaatg tttcttccaa 1020
aggtgcagtc tccaaagaga ttacgaatgc cttggaaacc tgggtgcct tgggtcagga 1080
catcaacttg gacattccta gtttcaaat gagtgtatgtt attgacgata taaaatggga 1140
aaaaacttca gacaagaaaa agattgcaca attcagaaaa gagaagagaa ctttcaagga 1200
aaaagatata tataagctat taaaaatgg aactctgaaa attaagcatc tgaagaccga 1260

tgatcaggat	atctacaagg	tatcaatata	tgataaaaaaa	ggaaaaaaatg	tgttggaaaa	1320
aatatttcat	ttgaagattc	aagagagggt	ctcaaaacca	aagatctcct	ggacttgtat	1380
caacacaacc	ctgacccgtg	aggtaatgaa	tggaaactgac	cccgaattaa	acctgtatca	1440
agatggaaa	catctaaaac	tttctcagag	ggtcatcaca	cacaagtggaa	ccaccagcct	1500
gagtgcaaaa	ttcaagtgc	cagcagggaa	caaagtca	aaggaatcca	gtgtcgagcc	1560
tgtcagctgt	ccagagaaaag	ggatccagg	gagtagggcc	cgatccttct	agagtcgagc	1620
tctttaagg	tagcaaggtt	acaagacagg	ttaaggaga	ccaatagaaa	ctgggcttgt	1680
cgagacagag	aagactctt	cgttctgtat	aggcacctat	tggcttacg	cggccgcgaa	1740
ttccaagctt	gagttattcta	tcgtgtcacc	taaataactt	ggcgtaatca	tggcatatc	1800
tgttccctgt	gtgaaattgt	tatccgctca	caattccaca	caacatacga	gccggaagca	1860
taaagtgtaa	agcctgggt	gcctaattgag	tgagctaact	cacattaatt	gcgttgcgcg	1920
atgcttccat	tttgcgggg	ttaatgc	gagaagacat	gataagatac	attgatgagt	1980
ttggacaaac	cacaacaaga	atgcagtgaa	aaaaatgttt	tatttgtgaa	atttgtgatg	2040
ctattgc	tttgc	attataagct	gcaataaaca	agttacaac	aacaattgca	2100
ttcattttat	gtttcaggtt	caggggaga	tgtggaggt	ttttaaagc	aagtaaaacc	2160
tctacaaaatg	ttgtaaaatc	cgataaggat	cgattccgga	gcctgaatgg	cgaatggacg	2220
cgccctgtag	cggegcatta	agcgcgggg	gtgtgggtt	taegec	tgaccgctac	2280
acttgc	cccttagc	ccgtc	cgcttctt	ccttc	tcgcccacgtt	2340
cgccggctt	ccccgtcaag	ctctaaatcg	ggggctccct	ttaggg	gatttagtgc	2400
tttacggcac	ctcgacccca	aaaaacttga	ttaggg	gttcacgt	gtgggcacatc	2460
gccctgatag	acggttttc	gcccttgac	gttggagtcc	acgttcttta	atagtggact	2520
cttgc	acttgc	acttgc	tatctcg	tattctttt	atttataagg	2580
gatttgc	atttcg	atggtaaa	aatgagctg	atthaacaaa	aatttaacgc	2640
gaattttaac	aaaatattaa	cgcttacaat	ttcgcc	tac	ggcgaaaga	2700
accagctgt	aatgtgtgt	cagttagggt	gtggaaagtc	cccaggctc	ccagcaggca	2760
gaagtatgc	aagcatgc	ctcaattat	cagcaaccag	gtgtggaaag	tccccaggct	2820
ccccaggc	cagaagtatg	caaagcatgc	atctcaattt	gtcagcaacc	atagtcccgc	2880
ccctaactcc	gcccattcc	cccctaactc	cgccc	cgccattct	cgccccatg	2940
gctgactaat	ttttttat	tatcgagagg	ccgaggccc	ctcgcc	gagctattcc	3000
agaagtatg	aggaggctt	tttggaggcc	taggtttt	aaaaagctt	gattcttctg	3060
acacaacat	ctcgaactt	aggtagagc	caccatgatt	gaacaagatg	gattgcacgc	3120
aggttctcg	gccc	tttgggg	tggagagct	atcggtat	gactggc	3180
cggctgtct	gatggc	ggc	gtcagc	ggggccc	ttctttt	3240
caagaccgac	ctgtccgg	tg	gtcagc	ggggccc	ttgtatccg	3300
gctggccacg	acgggcgtt	cttgc	gtgt	ctcgac	gttgcactg	3360
ggactggctg	ctattgg	ggc	gcaggatctc	ctgt	catctc	3420
tgc	gagaaa	gtatccatc	tgg	gtatgc	ttgtatccg	3480
tac	ctg	gaccacc	aagc	aa	tcgcatcg	3540
agccgg	ttc	gtc	gtc	cg	ctcgatg	3600
actgttgc	act	gtc	act	cg	cgcc	3660
cgatgc	tt	cc	cg	cc	ccat	3720
tggccgg	gg	gt	gg	cc	tc	3780
tgaagag	gg	gg	gt	cc	at	3840
cgat	gg	gg	gt	cc	tt	3900
gggttoga	gg	gg	gt	cc	ttt	3960
aaaat	gg	gg	gt	cc	ttt	4020
atctt	gg	gg	gt	cc	ttt	4080
ctctc	gg	gg	gt	cc	ttt	4140
ccg	gg	gg	gt	cc	ttt	4200
ccgt	gg	gg	gt	cc	ttt	4260
gag	gg	gg	gt	cc	ttt	4320
gaa	gg	gg	gt	cc	ttt	4380
atg	gg	gg	gt	cc	ttt	4440
cgg	gg	gg	gt	cc	ttt	4500
aag	gg	gg	gt	cc	ttt	4560
ttg	gg	gg	gt	cc	ttt	4620
gtggc	gg	gg	gt	cc	ttt	4680

attctcagaa tgacttggtt gagtaactcac cagtcacaga aaagcatctt acggatggca 4740
 tgacagtaag agaattatgc agtgcgtcca taaccatgag tgataacact gcggccaaact 4800
 tacttctgac aacgatcgga ggaccgaagg agctaaccgc tttttgcac aacatgggg 4860
 atcatgtAAC tcgccttgat cgTTgggaac cggagctgaa tgaAGccata ccaaAcgacg 4920
 agcgtgacac cacgatgcct gtagcaatgg caacaacggt gcgcaaaacta ttaactggcg 4980
 aactacttac tctagcttcc cggcaacaat taatagactg gatggaggcg gataaaagtt 5040
 caggaccact tctgcgtcg gcccTTccgg ctggctgggtt tattgtgtat aaatctggag 5100
 ccgtgagcg tgggtctcg ggtatcattg cagcaactggg gccagatggt aagccctccc 5160
 gtatcgtagt tatctacacg acggggagtc aggcaactat ggatgaacga aatagacaga 5220
 tcgcgtgagat aggtgcctca ctgattaagc attggtaact gtcagaccaa gtttactcat 5280
 atatacttta gattgattta aaacttcatt ttaatttaa aaggatctag gtgaagatcc 5340
 ttttgataa tctcatgacc aaaatccctt aacgtgagtt ttcgttccac tgagcgtcag 5400
 accccgtaga aaagatcaaa ggatcttctt gagatcctt ttttgcgc gtaatctgct 5460
 gctgcaaac aaaaaaaacca cccgttaccag cggTgggtt gttgcggat caagactac 5520
 caactctttt tccgaaggta actggcttca gcagagcgc gataccaaat actgtccttc 5580
 tagttagtgc gtagttaggc caccacttca agaactctgt agcaccgcct acataacctcg 5640
 ctctgctaat cctgttacca gtggctgctg ccagtggcga taagtctgtt cttaCCGGT 5700
 tggactcaag acgatagttt ccgataagg cgcageggc gggctgaacg gggggttcgt 5760
 gcacacagcc cagcttggag cgaacgcac acaccgaact gagataccta cagcgtgagc 5820
 tatgagaaag cggccacgctt cccgaaggga gaaaggcgc gaggatccg gtaagccgc 5880
 gggcggaaac aggagagcgc acgagggagc ttccaggggg aaacgcctgg tatcttata 5940
 gtcctgtcgg gtttcggccac ctctgacttg agcgtcgatt ttgtgtatgc tgcgtcagg 6000
 ggccggagct atggaaaaac gccagcaacg cggcctttt acggttccctg gcttttgct 6060
 ggccctttgc tcacatggct cgac 6084

<210> 8
 <211> 6085
 <212> DNA
 <213> Homo sapiens

<400> 8
 agatcttcaa tattggccat tagccatatt attcatgtgt tatatacgat aaatcaatat 60
 tggctattgg ccattgcata cgttgtatct atatcataat atgtacattt atattggctc 120
 atgtccaaata tgaccgcccattt gttggcattt attattgact agttatataat agtaatcaat 180
 tacggggtca ttagttcata gcccataatgggatggccgttccgc gttacataac ttacggtaaa 240
 tggcccgctt ggctgaccgc ccaacgcaccc cccgcatttgc acgtcaataa tgacgtatgt 300
 tcccatagta acgccaatag ggactttcca ttgacgtcaa tgggtggagt atttacggta 360
 aactgcccac ttggcagtac atcaagtgtt tcatatgcac agtccggcccc ctattgacgt 420
 caatgacggt aaatggcccg cctggcatttgc tggccagttac atgaccttac gggactttcc 480
 tacattggcag tacatctacg tatttagtcat cgctattacc atgggtatgc ggtttggca 540
 gtacaccaat gggcgtggat agcggtttgc ctcacgggat tttccaagtc tccaccccat 600
 tgacgtcaat gggagtttgc tttggcaccat aaatcaacgg gactttccaa aatgtcgtaa 660
 caactgcgtat cggccggcccc gttgacgcacca atggggcgta ggcgtgtacg gtggggaggc 720
 tatataagca gagctcgatggt agtgaaccgtt cagatcacta gaagctttat tgcgttagtt 780
 tattcacagtt aaattgttcaat cgcgttgcgtt gtttctgaca caacagtctc gaacttaagc 840
 tgcgttgcgtt ctcttaatttactccaccat tctcacttca gttccttttgc cctccaccat 900
 tctcacttca gttccttttgc catgaagagc tcagaatcaa aagagggaaac caacccctaa 960
 gatgagctt ccatgtaaaat ttgttagccat cttccctctg atttcaatgt tttcttccaa 1020
 aggtgcgttc tccaaagaga ttacgaatgc cttggaaacc tgggtgcct tgggtcagga 1080
 catcaacttgc gacattccta gtttcaat gaggatgtat attgacgata taaaatggga 1140
 aaaaacttca gacaagaaaa agattgcaca attcagaaaa gagaagagaa ctttcaagga 1200
 aaaagatatac tataagcttat taaaaatgg aactctgaaa attaagcato tgaagaccga 1260
 tgatcaggat atctacaagg tataaatataat tgatataaaaa gggaaaaatg tggggaaaa 1320
 aatatttgc ttagaaatgc aagaggggtt ctcaaaaacca aagatctccctt ggacttgc 1380
 caacacaacc ctgacccgttgc aggtatgaa tggactgac cccgaattaa acctgtatca 1440
 agatggggaaa catctaaaac ttctcagag ggtcatcaca cacaagtggc ccaccagcct 1500

gagcgtgaca	ccacgatgcc	tgttagcaatg	gcaacaacgt	tgcgcaaact	attaactggc	4980
gaactactta	ctcttagcttc	ccggcaacaa	ttaatagact	ggatggaggc	ggataaaagtt	5040
gcaggaccac	ttctgcgttc	ggcccttccg	gctggcttgt	ttattgtca	taaatctgga	5100
gccgggtgagc	gtgggtctcg	cggtatcatt	gcagcactgg	ggccagatgg	taagccctcc	5160
cgtatcgtag	ttatctacac	gacggggagt	caggcaacta	tggatgaacg	aaatagacag	5220
atcgctgaga	taggtgcctc	actgattaag	cattggtaac	tgtcagacca	agtttactca	5280
tatatacttt	agattgattt	aaaacttcat	tttaattta	aaaggatcta	ggtgaagatc	5340
ctttttgata	atctcatgac	caaaatccc	taacgtgagt	tttcgttcca	ctgagcgtca	5400
gaccggtag	aaaagatcaa	aggatcttct	tgagatcctt	tttttctgcg	cgtaatctgc	5460
tgcttgc当地	caaaaaaacc	accgtacca	gcgggtggttt	gttgcggga	tcaagagcta	5520
ccaaactctt	ttccgaaggt	aactggcttc	agcagagcgc	agataccaa	tactgtcctt	5580
ctagtgtac	cgtagttagg	ccaccacttc	aagaactctg	tagcaccgccc	tacataacctc	5640
gctctgtaa	tcctgttacc	agtggctgct	gccagtggcg	ataagtctgt	tcttaccggg	5700
ttggactcaa	gacgatagtt	accggataag	gcgcagcgtt	cgggctgaac	gggggggttcg	5760
tgcacacagc	ccagcttgg	gcgaacgacc	tacaccgaac	ttagatacct	acagcgtgag	5820
ctatgagaaa	gcgccacgt	tcccgaaggg	agaaaggcgg	acaggtatcc	ggtaagcggc	5880
agggtcgaa	caggagagcg	cacgagggag	cttccagggg	gaaacgcctg	gtatctttat	5940
agtccctgtcg	ggtttgc当地	cctctgactt	gagcgtcgt	ttttgtatg	ctcgtaagg	6000
ggggcggagcc	tatggaaaaa	cgc当地caac	gcggcctt	tacggttcct	ggcctttgc	6060
tggccttttg	ctcacatggc	tcgac				6085

<210> 9
<211> 6086
<212> DNA
<213> Homo sapiens

<400> 9

agatcttcaa	tattggccat	tagccatatt	attcatttgt	tatatacgat	aatcaat	60
tggcatttgg	ccattgcata	cgttgtatct	atatcataat	atgtacattt	atattggctc	120
atgtccaata	tgaccgccat	gttgcattt	attattgtact	agtttataat	agtaatcaat	180
tacggggtca	ttagttcata	gccccatata	ggagttccgc	gttacataac	ttacggtaaa	240
tggcccgct	ggctgacccg	ccaaacgacc	ccgcccattt	acgtcaataa	tgacgtatgt	300
tcccatagta	acgccaatag	ggactttcca	ttgacgtcaa	tgggtggagt	atttacgta	360
aactgcccac	ttggcagtag	atcaagtgt	tcatatgcca	agtccgcccc	ctattgacgt	420
caatgacgt	aaatggcccg	cctggcatta	tgccccagtag	atgaccttac	gggactttcc	480
tacttggcag	tacatctacg	tattagtcat	cgcttattacc	atgggtatgc	ggttttggca	540
gtacaccaat	gggcgtgat	agcggttga	ctcacggga	tttccaagtc	tccacccat	600
tgacgtcaat	gggagttgt	tttggcacca	aaatcaacgg	gactttccaa	aatgtctaa	660
caactgcat	cgcccgcccc	gttgc当地	atgggcggta	ggcgtgtacg	gtgggaggtc	720
tatataagca	gagctcgat	ttgttgc当地	cagatcacta	gaagctttat	tgccgttagtt	780
tatcacagtt	aaattgtcaa	cgc当地	gttctgtaca	caacagtctc	gaacttaagc	840
tgcagtgtact	ctcttaatta	actccaccag	tctcacttca	gttccctttt	cctccaccag	900
tctcacttca	gttccctttt	catgaagagc	tcagaatcaa	aagagggaaac	caacccctaa	960
gatgagctt	ccatgttaat	tttgc当地	cttccttctg	atttcaatg	tttcttccaa	1020
aggtgcagtc	tccaaagaga	ttacgaatgc	cttggaaacc	tgggtgcct	tgggtcagga	1080
catcaacttgc	gacattctca	gtttcaat	gagtgtatgat	attgacgata	taaaatggga	1140
aaaaacttca	gacaagaaaa	agattgcaca	attcagaaaa	gagaagaga	cttcaagga	1200
aaaagataca	tataagctat	taaaaatgg	aactctgaaa	attaagcatc	tgaagaccga	1260
tgatcaggat	atctacaagg	tatcaatata	tgatcaaaaa	ggaaaaatg	tgttggaaaa	1320
aatatttgc	ttgaagattc	aagagagggt	ctcaaaacca	aagatctcct	ggacttgc当地	1380
caacacaacc	ctgacctgt	aggtatgaa	tggactgac	ccc当地at	acctgtatca	1440
agatggaaaa	catctaaaac	tttctcagag	ggtcatcaca	cacaagtgg	ccaccaggct	1500
gagtgc当地	ttcaagtgca	cacgaggaa	caaagtccgc	aaggaatcca	gtgtcgagcc	1560
tgtcagctgt	ccagagaaaag	ggatccacag	gtgagtaggg	ccc当地ctt	ctagagtc当地	1620
gctctcttaa	ggttagcaagg	ttacaagaca	ggtttaagga	gaccaataga	aactggctt	1680
gtcgagacag	agaagactct	tgcgttctg	ataggcacct	attggcttca	cgcggccg	1740

aattccaagc ttgagtttac tatacggtca cctaaataac ttggcgtaat catggtcata 1800
tctgtttcct gtgtgaaatt gttatccgct cacaattcca cacaacatac gagccggaag 1860
cataaaagtgt aaaggctggg gtcgctaatt agtgagctaa ctacacattaa ttgcgttgcg 1920
cgatgtttcc attttgttag ggttaatgtc tcgagaagac atgataagat acattgtga 1980
gtttggacaa accacaacaa gaatgcagtg aaaaaaatgc tttatgttgc aaatttgtga 2040
tgctattgtct ttatgttaa ccattataag ctgcaataaa caagttaca acaacaattg 2100
cattcatttt atgtttcagg ttcaggggg gatgtgggag gttttttaaa gcaagtaaaa 2160
cctctacaaa tgtggtaaaa tccgataagg atcgattccg ggcctgtaat ggcgaatgga 2220
cgccccctgt agcggcgcatt taagcgccg ggggtgtggg gttacgcgcg cgtgaccgct 2280
acacttgcctt ggcgccttagc gcccgcctt ttcgcgttctt tcccttcctt tctcgccacg 2340
ttcgcggct ttccccgtca agctctaaat cgggggctcc ctttaggggtt ccgatttagt 2400
gctttacggc acctcgaccc caaaaaactt gatttagggg atggttacg tagtggcca 2460
tcgcctgtat agacggttt tcgcctttt acgttggagt ccacgttctt taatagtgg 2520
ctcttgttcc aaactggAAC aacactcaac cctatctcg tctattctt tgatttataa 2580
gggattttgc cgatttcggc ctattggta aaaaatgagc tgatttaaca aaaatttaac 2640
gcgaattttt acaaaaatatt aacgcttaca atttcgctg tgtaccttctt gaggcgaaaa 2700
gaaccagctg tggaaatgtgt gtcagttagg gtgtggaaag tccccaggct ccccagcagg 2760
cagaagtagt caaagcatgc atctcaatta gtcagcaacc aggtgtggaa agtccccagg 2820
ctccccagca ggcagaagta tgcaaagcat gcatctcaat tagtcagcaa ccatagtcac 2880
gccoctaact cggcccatcc cgccccctaac tccgcccagt tccgcccatt ctccgcggca 2940
tggotgacta atttttttt tttatgcaga ggccgaggcc gcctcggttctt ctgagctatt 3000
ccagaagtag tgaggagct ttttggagg cctaggctt tgcaaaaagc ttgatttttc 3060
tgacacaaca gtcctcgaact taaggctaga gccaccatga ttgaacaaga tggattgcac 3120
gcaggttctc cggccgcttgg gttggagagg ctattcggtt atgactggc acaacagaca 3180
atcggtctgt ctgatgcgcg cgtgttccgg ctgtcagcgc agggggcggcc gtttctttt 3240
gtcaagaccg acctgtccgg tgcctgaat gaaactgcagg acgaggcago gggctatcg 3300
tggctggcca cgacgggggt tccttgcgc gctgtgtcg acgttgcac tgaagcgga 3360
agggactggc tgctattttgg cgaagtgcgcg gggcaggatc tcctgtcatc tcaccttgct 3420
cctggcgaga aagtatccat catgggtat gcaatgggc ggtgcatac gttgatccg 3480
gctacctgccc cattcgacca ccaagcgaaa catcgcatcg aegagacacg tactcgatg 3540
gaagccggtc ttgtcgatca ggatgtctg gacgaagacg atcaggggct cgcgcagcc 3600
gaactgttcg ccaggctcaa ggccgcgtat cccgacggcg aggtatcgat cgtgaccat 3660
ggcggatgcct gtttgcggaa tataatgggt gaaaatggcc gtttttgcg attcatcgac 3720
tggccggc tgggtgtggc ggaccgtat caggacatag cggtgtctac cctgtatattt 3780
gctgaagagc ttggccggca atggctgac gcttcctcg tgctttacgg tatecgccgt 3840
cccgatttcg acgcgcattcg ctttctatcg ctttttgcg agttttctg agcgggactc 3900
tggggttcga aatgaccgac caagcgacgc ccaacctgca atcacgtatgg ccgcaataaa 3960
atatctttat tttcattaca tctgtgtgtt gttttttgt gtgaagatcc gcttatggtg 4020
caactctagt acaatctgt ctgatgcgcg atagttaaatc cagccccgac acccgccaac 4080
accgcgtgc ggcgcctgac gggcttgc tgcctccggca tccgcttaca gacaagctgt 4140
gaccgtctcc gggagctgca tgggtcagag gtttttccaccc tcatacaccga aacgcgcgag 4200
acgaaaaggc ctcgtgatac gccttattttt ataggttaat gtcatgataa taatggttc 4260
tttagacgtca ggtggactt ttggggaaa tggcgccgaa acccctattt gttttttttt 4320
ctaaatacat tcaaataatgt atccgctcat gagacaataa ccctgataaa tgcttcaata 4380
atattgaaaa aggaagagta tggatattca acatttcgt gtcgcctta ttccctttt 4440
tgccgcattt tgccttcgt ttttgcgtca cccagaaacg ctgggtgaaag taaaagatgc 4500
tgaagatcg ttgggtgcac gagtgggtt catcgactg gatctcaaca gggtaagat 4560
ccttgagagt ttgcggcccg aagaacgttt tccatgtatc agacttttta aagttctgct 4620
atgtggcgcg gtattatccc gtattgcgc cggcaagag caactcggtc gcccataca 4680
ctattctcg aatgacttgg ttggatgttcc accagtccaca gaaaagcato ttacggatgg 4740
catgacagta agagaattat gcagtgcgc cataaccatg agtgataaca ctgcggccaa 4800
cttacttctg acaacgcgtg gaggaccgaa ggagctaaacc gttttttgc acaacatggg 4860
ggatcatgta actcgcccttgc atcggtggg accggagctg aatgaagcca taccacacga 4920
cgagcgtgac accacgtgc ctgttagcaat ggcaacaacg ttgcgcaaaac tattactgg 4980
cgaactactt actctagctt cccggcaaca attaatagac tggatggagg cggataaaagt 5040
tgcaggacca cttctgcgtc cggcccttcc ggctgggttgc tttatgtctg ataaatctgg 5100
agccgggttag cgtgggtctc ggggtatcat tgcagcactg gggccagatg gtaagccctc 5160

ccgtatcgta gttatctaca cgacggggag tcaggcaact atggatgaac gaaatagaca 5220
gatcgcttag ataggtgcct cactgattaa gcattggtaa ctgtcagacc aagtttactc 5280
atatatactt tagattgatt taaaacttca ttttaattt aaaaggatct aggtgaagat 5340
ccttttgat aatctcatga ccaaataccc ttaacgttag tttcggttcc actgagcgtc 5400
agaccccgta gaaaagatca aaggatctt ttgagatctt tttttctgc gcgtaatctg 5460
ctgcttgcaa aaaaaaaaaac caccgctacc agcgggtggg tggggccgg atcaagagct 5520
accaactctt ttccgaagg taactggctt cagcagagcg cagataccaa atactgtcct 5580
tctagttag ccgttagttag gccaccactt caagaactct gtacgaccgc ctacataacct 5640
cgctctgcta atcctgttac cagtggtgc tgccagtgcc gataagtcgt gtcttaccgg 5700
gttggactca agacgatagt taccggataa ggccgcagcgg tcgggctgaa cgggggttc 5760
gtgcacacag cccagctgg agcgaacgac ctacaccgaa ctgagatacc tacagcgtga 5820
gctatgagaa agcgcacgc ttcccaagg gagaaggcg gacaggtatc cggtaaagcgg 5880
cagggtcgga acaggagagc gcacgaggga gttccaggg ggaaacgcct ggtatctta 5940
tagtctgtc gggtttcgcc acctctgact tgagcgtcga ttttgtat gtcgtcagg 6000
ggggcggagc ctatggaaaa acgcccagcaa cgccgcctt ttacgggttcc tggcctttg 6060
ctggccttt gtcacatgg ctgcac 6086

<210> 10
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<221> modified_base
<222> (29)..(32)
<223> a, c, t, g, other or unknown

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 10
ttttttttt ttcgtcagcg gccgcattnn nntttatt 38

<210> 11
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 11
cagatca cttttttttt tgccgg 25

<210> 12
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 12
tttcgtcag cggccgcatac 20

<210> 13
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 13
actcataggc catagaggcc tatacagtt aaattgctaa cgca 45

<210> 14
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 14
ctcgtttagt gcggccgctc agatcactga attctgacga cct 43

<210> 15
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 15
ctcgtttagt ggcgcgcag atcactgaat tctgacgacc t 41

<210> 16
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 16
gacctactga ttaacggcca ta 22

```

<210> 17
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

<400> 17
tcgtcagaat tcagtgtact          20

<210> 18
<211> 6836
<212> DNA
<213> Homo sapiens

<400> 18
agatcttcaa tattggccat tagccatatt attcatttgt tatatacgat aaatcaatat 60
tggctattgg ccattgcata cgttgtatct atatcataat atgtacattt atattggctc 120
atgtccaata tgaccgcat gttggcattg attattgtact agttataat agtaatcaat 180
tacggggtca ttagttcata gcccataat ggagttccgc gttacataac ttacggtaaa 240
tggcccgct ggctgaccgc ccaacgaccc cccgccccattg acgtcaataa tgacgtatgt 300
tcccatatga acgccaatag ggactttcca ttgacgtcaa tgggtggagt atttacggta 360
aactgcccac ttggcagttac atcaagtgtt tcatatgcctt agtccggccc ctattgacgt 420
caatgacggt aaatggcccg cctggcattt tgcccagttac atgaccttac gggactttcc 480
tacttggcag tacatctacg tatttgtcat cgctattacc atggtgatgc gttttggca 540
gtacaccaat gggcgtggat agcggtttga ctcacggggaa tttccaagtc tccacccat 600
tgacgtcaat gggagttgt tttggcacca aaatcaacgg gactttccaa aatgtcgtaa 660
caactgcgt cgcggccccc gttgacgc当地 atggggcggtt ggcgtgtacg gtgggaggc 720
tatataagca gagctcggtt agtgaaccgt cagatcacta gaagctttat tgcggtagtt 780
tatcacagtt aaattgtcaa cgcaatgtt gcttctgaca caacagtctc gaacttaaagc 840
tgcagtgact ctcttaaatc caccatggctt acaggttgc当地 actcgatct agcgctatata 900
gcgttgc当地 aatttctatg cgccaccgtt ctcggagcac tgc当地 gaccgc当地 ctggccgc 960
cgcccgatcc tgctcgcttc gctacttggaa gccactatcg actacgc当地 catggccgacc 1020
acacccgtcc tggatctt ctcacggggaa cgc当地 ctggcatcac cggccgc当地 1080
ggcgtggttt ctggcgcttata tttccggac atcaccgtt gggaaatcg ggc当地 gcccac 1140
ttcgggctca tgagcgctt tttccggctt ctttccggat ctttccggat ctttccggat 1200
ccaaattctca ttttccggat ctttccggat ctttccggat ctttccggat 1260
gtacaatctt ctttccggat ctttccggat ctttccggat ctttccggat 1320
aggcgctt当地 gtttccggat ctttccggat ctttccggat ctttccggat 1380
attgc当地 gtttccggat ctttccggat ctttccggat ctttccggat 1440
gatatacgcc tatctgggg gactagggtt gtttccggat ctttccggat 1500
acgc当地 gtttccggat ctttccggat ctttccggat ctttccggat 1560
gtatctt当地 gtttccggat ctttccggat ctttccggat ctttccggat 1620
cttacaagga gagaaaaaggcc accgtgc当地 ctttccggat ctttccggat 1680
tgc当地 tttccggat ctttccggat ctttccggat ctttccggat 1740
cattgc当地 gtttccggat ctttccggat ctttccggat ctttccggat 1800
tcaccacatt gtttccggat ctttccggat ctttccggat ctttccggat 1860
ttc当地 tttccggat ctttccggat ctttccggat ctttccggat 1920
tggccatccgg caagaacggg gaccgtccctt gtttccggat ctttccggat 1980
tccagagaat gaccacaacc tttccggat ctttccggat ctttccggat 2040
agaagaccc gtttccggat ctttccggat ctttccggat ctttccggat 2100
ttctcagccag agaactcaag gaaacctccac aaggagctca ttttccggat ctttccggat 2160
atgatgc当地 aaaacttact gaaacaaccat aatttccggat ctttccggat 2220
tagttggtgg ctttccggat ctttccggat ctttccggat ctttccggat 2280

```

tttgacaag gatcatgcaa gacttgaaa gtgacacgtt tttccagaa attgattgg 2340
agaaatataa acttctgccaa gaatacccg gtgttctctc tgatgtccag gaggagaaag 2400
gcattaagta caaatttggaa gtatatgaga agaatgatta atcgatcttta agtttaatct 2460
ttcccgggg tacccgtcgac tgccggcg aattccaagc ttgagtattc tatacggtca 2520
cctaaataac ttggcgtaat catggtcata tctgttccct gtgtgaaatt gttatccgct 2580
cacaattcca cacaacatac gagccggaag cataaagtgt aaagcctggg gtgcctaattg 2640
agttagctaa ctcacattaa ttgcgttgcg cgatgcttcc attttgttag ggttaatgct 2700
tcgagaagac atgataagat acattgtga gtttggacaa accacaacaa gaatgcagt 2760
aaaaaaatgc ttatattgtg aaatttggaa tgctattgtt ttatttggaa ccattataag 2820
ctgcaataaa caagttaaaca acaacaattt cattcatttt atgtttcagg ttcaggggaa 2880
gatgtggag gttttttaaa gcaagtaaaa ccttacaaa tgggttggaaa tccgataagg 2940
atcgattccg gaggctgaat ggcaatggg cgcgcctgt agcggcgtat taagcgcggc 3000
gggtgtggg gttacgcgca cgtgaccgtt acacttgcgc ggcgccttagc gcccgcct 3060
ttcgctttct tcccttcctt tctcgccacg ttcgcggct ttccccgtca agctctaaat 3120
cgggggctcc cttaggggtt cggattttgt gcttacggc acctcgacc caaaaaaaaactt 3180
gattagggtg atggttcaacg tagtggggcca tcgcctgtat agacgggttt tgcgcctt 3240
acgttggagt ccacgttctt taatagtggaa ctcttgcctt aaactggaaac aacactcaac 3300
cctatctcggt tctattttt tgatttataa gggattttgc cgatttcggc ctattgtt 3360
aaaaatgago tgattnaaca aaaatitaac gcaattttta acaaaaatatt aacgcttaca 3420
atttcgccctg tgcacccatc gaggcggaaa gaaccagctg tggatgtgt gtcagttagg 3480
gtgtggaaag tccccaggtt cccagcagg cagaagatgt caaagcatgc atctcaatta 3540
gtcagcaacc aggtgtggaa agtccccagg ctccccagca ggcagaagta tgcaaaagcat 3600
gcatctcaat tagtcagcaaa ccatacgccc gcccctaact cgcggccatcc cggccctaacc 3660
tccgcccagt tccggccatt ctccggccca tggctgacta atttttttta ttatgcaga 3720
ggccgaggcc gcctcggtt ctgagctatt ccagaagtag tgaggaggct tttttggagg 3780
cctaggctt tgcaaaaagg ttgatttttgc tgacacaaca gtcgtcaact taaggctaga 3840
gccaccatga ttgaacaaga tggattgcac gcaagggttcc cggccgttgg ggtggagagg 3900
ctattcggt atgactgggc acaacagaca atcggtgttgc ctgatggccgc cgtgttccgg 3960
ctgtcagcgc agggggcccc ggttctttt gtcagaccg acctgtccgg tgcctgtat 4020
gaactgcagg acgaggcagg gcggctatcg tggctggcca cgacgggggtc tccttgcgc 4080
gctgtgtcg acgttgcac tgaagcggga agggactggc tgctattttgg cgaagtgcgc 4140
ggcaggatc tcctgtcatc tcacccgttgc cctggcaga aagtatccat catggctgtat 4200
gcaatgcggc ggctgcatac gcttgcattcg gtcacccgttgc cattcgacca ccaagcgaaa 4260
catcgcatcg agcgagcacg tactcgatgg gaagccgtc ttgtcgatca ggtatgtctg 4320
gacgaagagc atcaggggct cgcgcagcc gaaactgtcg ccaggctcaa ggcgcgcata 4380
cccgacggcg aggatctcg cgtgacccat ggcgtatgcct gcttgcggaa tatcatgtt 4440
gaaaatggcc gcttttgcatttgcatttgc gttggccggc tgggtgtggc ggaccgttat 4500
caggacatag cggtggctac ccgtatatt gctgaagagc ttggccggca atgggctgac 4560
cgcttcctcg tgctttacgg tattcgccgtt cccgatccgc agcgatcgatc tttctatcg 4620
cttcttgacg agttcttcgt agccggactc tgggttgcgaa aatgaccgac caagcgacgc 4680
ccaacctgcc atcacatgg ccgcataaaa atatcttatt tttcattaca tctgtgtt 4740
ggtttttgtt gtgaagatcc gctgtatgggt cactctcgtt acaatctgtt ctgatggccgc 4800
atagttaaatc cagccccgac acccgccaaac acccgctgac ggcgcctgac gggcttgc 4860
gctccggca tccgcttaca gacaagctgt gaccgtctcc gggagctgca tgggtcagag 4920
gttttcccg tcatcaccga aacgcgcggag acgaaagggtc ctgtgtatcc gcttattttt 4980
ataggttaat gtcgtatggaa taatggttt ttagacgtca ggtggcactt ttccggggaaa 5040
tgtgcgcggc accccattttt gtttattttt ctaaaatacat taaaatatgt atccgctcat 5100
gagacaataa ccctgataaa tgcttcaata atattggaaa aggaagagta tgagtattca 5160
acatttccgt gtcggccatc ttccctttt tgccggcattt tgcccttcgt tttttgtca 5220
cccgagaaacg ctgggtggaaag taaaagatgc tgaagatcgat tgggtgcac gagtgggtt 5280
catcgactg gatctcaaca gcggtaagat ctttgagagt ttccggcccg aagaacgttt 5340
tccaatgtat agcactttt aagttctgtt atgtggccgc gtattatccc gtattgacgc 5400
cgggcaagag caactcggtc gcccataca ctattctcgtt aatgacttgg ttgagtactc 5460
accagtcaca gaaaagcattt ttacggatgg catgacagta agagaattat gcagtgc 5520
cataaccatg agtataaca ctgcggccaa cttacttctg acaacatgc gaggaccgaa 5580
ggagctaacc gctttttgc acaacatggg ggatcatgtt actgccttgc atcggtgggaa 5640
accggagctg aatgaagcca taccaaacgca cgagcgtgac accacatgc ctgttagcaat 5700

ggcaacaacg	ttgcgcAAC	tattaactgg	cgaactactt	actctagcTT	ccggcaaca	5760
attaatagac	tggatggagg	cgataaaagt	tgcaggacca	cttctgcgtc	cggcccttcc	5820
ggctggctgg	tttattgtcg	ataaaatctgg	agccggtgag	cgtgggtctc	gccccatcat	5880
tgcagcactg	ggggccagatg	gtaagccctc	ccgtatcgta	gttatctaca	cgacggggag	5940
tcaggcaact	atggatgaac	gaaatagaca	gatcgctgag	ataggtgcct	cactgattaa	6000
gcattggtaa	ctgtcagacc	aagttaactc	atataactt	tagattgatt	taaaacttca	6060
tttttaattt	aaaaggatct	aggtgaagat	cctttttagt	aatctcatga	ccaaaatccc	6120
ttaacgtgag	ttttcgTcc	actgagcgtc	agaccccgta	gaaaagatca	aaggatcttc	6180
ttgagatcct	tttttctgc	gctgtatctg	ctgtttgcaa	acaaaaaaac	caccgctacc	6240
agcggtgggt	tgttgtccgg	atcaagagct	accaacttct	tttccgaagg	taactggcTT	6300
cagcagagcg	cagataccaa	atactgtcct	tctagtgtag	ccgttagtt	gccaccactt	6360
caagaactct	gtagcaccgc	ctacataacct	cgctctgcta	atcctgttac	cagtggctgc	6420
tgccagtggc	gataagtgcgt	gtcttaccgg	gttggactca	agacgatagt	taccggataa	6480
ggcgcagcgg	tcgggctgaa	cgggggttc	gtgcacacag	cccagcttgg	agcgaacgac	6540
ctacaccgaa	ctgagatacc	tacagcgtga	gctatgagaa	agcggcacgc	ttcccgaaagg	6600
gagaaaaggcg	gacaggatatc	cggttaagcgg	cagggtcgg	acaggagagc	gcacgaggga	6660
gcttccaggg	ggaaacgcct	ggtatctta	tagtctgtc	gggttgcgc	acctctgact	6720
tgagcgtcga	tttttgtat	gctcgtaagg	ggggcggagc	ctatggaaaa	acgcccagcaa	6780
cgoggccTT	ttacggtcc	tggcctttt	ctggcctttt	gctcacatgg	ctcgac	6836

<210> 19
<211> 4644
<212> DNA
<213> Homo sapiens

<400> 19
gatcttaat attggccatt agccatatta ttcattggTT atatagcata aatcaatatt 60
ggttattggc cattgcatac gttgtatcta tattcataata tgtaCATTtta tattggctca 120
tgtccaaat gaccgcccattt ttggcattga ttattgacta gtttataata gtaatcaatt 180
acggggtcat tagttcatag cccatatatg gagttcccgCG ttacataact tacggtaaat 240
ggcccgcctg gctgaccggc caacgacccc cgcccatttga cgtcaataat gacgtatgtt 300
cccatagtaa cgccaatagg gactttccat tgacgttcaat ggggtggagta ttacggtaa 360
actgcccact tggcagtaca tcaagtgtat catatgccaat gtccggcccc tattgacgtc 420
aatgacggta aatggcccgC ctggcattat gcccagttaca tgaccttacg ggactttcct 480
acttggcagt acatctacgt attagtcatc gctattacca tgggtatgcg gttttggcag 540
tacaccaatg gggtggata gcggtttgac tcacggggat ttccaagtct ccacccatt 600
gacgtcaatg ggagtttggTT ttggcaccAA aatcaacggg actttccaaa atgtcgtaac 660
aactgcgatc gcccccccg ttgacgcaaa tggggcggtag gcgtgtacgg tgggagggtct 720
atataaggcg agtcgttta gtgaaaccgtc agatcaactga atttgcacga cctactgatt 780
aacggccata gaggcctccct gcaagatcaat agaagctta ttggggtagt ttatcacagt 840
taaattgcta acgcagtcag tgcttctgac acaacagtct cgaacttaag ctgcagtgac 900
tctcttaat ccaccatggc tacaggttag tactcgctac cttaaagagag gcttatctgg 960
ccagttagca gtcgaagaaa gaagtttaag agagccgaaa caagcgctca tgagccgaa 1020
gtggcgagcc cgatcttccc catcggttagt gtcggcgata tagggccag caacccgacc 1080
tgtggcgccg gtgtatgcgg ccacgatgcg tccggcgtag aggtatccaca ggacgggtgt 1140
ggtcgcccatt atcgcgtatg cgatagtggc tccaaagttagc gaagcgagca ggactggcgc 1200
gccccaaag cggtcggaca gtgctcccgag aacgggtgcg catagaaatt gcatcaacgc 1260
atatacgct agatccttgc tagagtgcgat atctgtcgag ccatgtgagc aaaaggccag 1320
caaaaaggcca ggaaccgtaa aaaggcccgC ttgctggcgt tttccatag gctccggccc 1380
cctgacgagc atcacaaaaaa tcgacgctca agtcagaggt ggcggaaaccc gacaggacta 1440
taaagatacc aggctttcc tccttggaaatc tccctcgatc gctctctgt tccgaccctg 1500
ccgcttaccg gataacgttgc cgccttctc ctttgggaa gcgtggcgat ttctcatagc 1560
tcacgctgtt ggtatctcag ttgggtgtag gtcgttgcgt ccaagctggg ctgtgtgcac 1620
gaaccccccgg ttcaagccga cccgtcgcc ttatccgtt actatcgatc tgagtccaa 1680
ccgtaagac acgacttatac gccactggca gcagccactg gtaacaggat tagcagagcg 1740
aggtatgttag gcggtgcatac agatgttttgc aagtgggtggc ctaactacgg ctacactaga 1800

aggacagtat	ttggtatctg	cgctctgctg	aagccagtt	ccttcggaaa	aagagtgg	1860
agctcttgc	ccggcaaca	aaccaccgt	ggttagcgt	gttttttgt	ttgcaagcag	1920
cagattacgc	gcagaaaaaa	aggatctcaa	gaagatcctt	tcatctttc	tacgggtct	1980
gacgctcagt	ggaacaaaaa	ctcacgtta	gggattttgg	tcatgagatt	atcaaaaagg	2040
atcttacact	agatccttt	atcgggtgt	aataccgcac	agatgcgtaa	ggagaaaata	2100
ccgcatcagg	aaattgtaa	cgttaataat	tcagaagaac	tgcgtcaagaa	ggcgatagaa	2160
ggcgatgcgc	tgcgaatcgg	gagcggcgat	accgtaaagc	acgaggaagc	ggtcagccca	2220
ttcggccca	agctcttcag	caatatcacg	ggtagccaac	gctatgtcct	gatagcggtc	2280
cgcacacccc	agccggccac	agtcgatgaa	tccagaaaag	cgcccathtt	ccaccatgat	2340
attcggcaag	caggcatcgc	catgggtcac	gacgagatcc	tcgccccgt	gcatgctcgc	2400
cttgagcctg	gcgaacagtt	cggctggcgc	gagccctga	tgcgtttcgt	ccagatcatc	2460
ctgatcgaca	agaccggctt	ccatccgagt	acgtgctcgc	tgcgtgcgtat	gtttcqcttq	2520
gtggcgaat	gggcaggtag	ccggatcaag	cgtatgcagc	cgccgcattt	catcagccat	2580
gatggatact	ttctcgccag	gagcaagggt	agatgacagg	agatcctgcc	ccggcacttc	2640
gcccaatagc	agccagttccc	ttcccgcttc	agtgacaacg	tcgagcacag	ctgcgcagg	2700
aacggccgtc	gtggccagcc	acgatagccg	cgctgcctcg	tcttcagtt	cattcagggc	2760
accggacagg	tcggcttga	caaaaagaac	cgggcccccc	tgcgtgaca	gccggAACAC	2820
ggccgcatca	gagcagccga	ttgtctgtt	tgccccgtca	tagccaaata	gcctctccac	2880
ccaaageggcc	ggagaaccty	cgtcaatcc	atcttgcata	atcatgcga	acgatcctca	2940
tcctgtctct	tgatcagagc	ttgatcccct	gcccattcag	atccctggcg	gagaaaggc	3000
catccagtt	acttgcagg	gcttgcac	cttaccagat	aaaagtgc	atcattggaa	3060
aacgttcaat	tctgaggcgg	aaagaaccag	ctgtgaaatg	tgtgtcagtt	agggtgtgga	3120
aagtcccccag	gctcccccagc	aggcagaagt	atgcaaaagca	tgcatactcaa	ttagtcagca	3180
accaggtgt	gaaagtcccc	aggctcccca	gcaggcagaa	gtatgcac	catgcacatc	3240
aattagtca	caaccatagt	cccgccccca	actccggcc	tcccgccccct	aactccgccc	3300
agttccgccc	atttccgccc	ccatggctga	ctaattttt	ttatttatgc	agaggccgag	3360
ggccgcctcg	cctctgagct	attccagaag	tagtggag	gcttttttgg	aggcctaggc	3420
ttttgcaaaa	agcttgattc	ttctgacaca	acagtctcga	acttaaggct	agagccacca	3480
tgattgaaca	agatggattt	cacgcagggtt	ctccggccgc	ttgggtggag	aggctattcg	3540
gctatgactg	ggcacaacag	acaatcggt	gctctgtatgc	cgccgtgtt	cggtgtcag	3600
cgcaggggcgc	cccggttctt	tttgtcaaga	ccgaccgtgc	cggtggccctg	aatgaactgc	3660
aggacgaggc	agcgcggcta	tcgtggctgg	ccacgcacgg	cggtccctgc	gcagctgtgc	3720
tcgacgttgt	cactgaagcg	ggaaggggact	ggtgtctt	ggcgaagtg	ccggggcagg	3780
atctcctgtc	atctcacctt	gctctgcgc	agaaagatc	catcatggct	gatgcaatgc	3840
ggccggctgca	tacgcttgc	ccggcttac	gccattcga	ccaccaagcg	aaacatcgca	3900
tcgagcggc	acgtactcgg	atggaagccg	gttttgcga	tcaggatgtat	ctggacaaag	3960
agcatcaggg	gctcgccca	gcccactgt	tcgcccaggct	caaggcgcgc	atgcccacg	4020
gcgaggatct	cgtcggtacc	catggcgatg	cctgctgccc	gaatatcatg	gtggaaaatg	4080
gcgcgttttc	tggatttc	gactgtggcc	ggctgggtgt	ggcggaccgc	tatcagacaa	4140
tagcgttggc	tacccgtat	attgtcgtt	agcttgcgg	cgaatggct	gaccgcctcc	4200
tcgtgtttt	cggtatcgcc	gctcccgatt	cgccatcgat	cgcccttctat	cgcccttctt	4260
acgagccatt	ctgatggagg	tagcggccgc	taacctggtt	gtgtactaat	tgagatgc	4320
gcttgcata	cttctgcctg	ctggggagcc	tggggacttt	ccacacccta	actgacacac	4380
atccacacgc	tggttttttc	cgccctcagaa	ggtacacagg	cgaatggct	agcgttataa	4440
ttttgttaaa	attcgcgtt	aatttttgtt	aaatcagatc	attttttac	caataggccg	4500
aaatcggcaa	aatcccttat	aaatcaaaag	aatagaccga	gatagggttg	agtgttgc	4560
cagtttgaa	caagagtcca	ctattaaaga	acgtggactc	caacgtcaaa	ggcgaaaaaa	4620
ccgtctatca	ggcgatggc	ccac				4644

<210> 20
<211> 5247
<212> DNA
<213> Homo sapiens

<400> 20
gatttcaat attggccatt agccatatta ttcattggtt atatagcata aatcaatatt 60

ggctattggc cattgcatac gtttatcta tatcataata tgcataat tattggctca 120
tgtccatat gacccgcatg ttggcattga ttatttgacta gttattaata gtaatcaatt 180
acgggtcat tagttcatag cccatatatg gagttcccg cgatataact tacggtaat 240
ggcccgactg gctgaccgcc caacgacccc cgccattga cgtcaataat gacgtatgtt 300
cccatagtaa cgccaatagg gactttccat tgacgtcaat gggtggagta tttacggtaa 360
actgcccact tggcagtaca tcaagtgtat catatgcca gtcggcccc tattgacgtc 420
aatgacggta aatggcccg ctggcattat gcccagtaca tgaccttacg ggacttcct 480
acttggcagt acatctacgt attagtcatc gctattacca tggtgatgca gtttggcag 540
tacaccaatg ggcgtggata gcggttgc tcacgggat ttccaagttt ccacccatt 600
gacgtcaatg ggagtttgg ttggcaccaa aatcaacggg actttccaaa atgtcgtaac 660
aactgcgatc gcccggccg ttgacgcaaa tgggcccgt tagtgcgtacgg tgggaggtct 720
atataagcag agctcgatc gtgaaaccgtc agatcactag aagctttt gcggtatgtt 780
atcacagtt aattgtcaac gcagtcgtg cttctgacac aacagtctcg aacttaagct 840
gcagtgactc tcttaaatcc accatggcta caggtgagta ctgcgtaccc taagagaggc 900
ctatctggcc agtagcagt cgaagaaaga agttaagag agccgaaaca agcgctcatg 960
agcccgaaatg ggcgagcccg atcttccca tcggtgatgt cgccgtatata ggcgcagca 1020
accgcacctg tggcggcgat gatccggcc acgatgcgtc cggcgtagag gatccacagg 1080
acgggtgtgg tcgcatgtat cgcgtatcg atagtggctc caagtagcga agcgagcagg 1140
actggggccgc ggccaaagcg gtcggacagt gctccgagaa cgggtgcgcg tagaaattgc 1200
atcaacgcat atagcgctatc atccctgtca gagtcgagat ctgtcgagcc atgtgagcaa 1260
aaggccagca aaaggccagg aaccgtaaaa aggccgcgtt gctggcggtt ttccataggc 1320
tccggccccc tgacgagcat cacaaaaatc gacgctcaag tcagagggtgg cgaaaccgca 1380
caggactata aagataccag gcgttcccc ctggaaagctc ctcgtgcgc tctcctgttc 1440
cgaccctgccc gcttaccgga tacctgtccg ccttctccc ttccggaaagc gtcggcgctt 1500
ctcatagctc acgctgttagg tatctcgtatc cggtgtaggt cgttcgttcc aagctggct 1560
gtgtgcacga acccccccgtt cagcccgacc gtcgcgcctt atccggtaac ttcgtcttg 1620
agtccaaaccg ggttaagacac gacttatacg cactggcagc agccactggt aacaggatta 1680
gcagagcggag gtatgttaggc ggtgtacag agttcttgc gttggcgctt aactacggct 1740
acactagaag gacagtatc ggtatctcg ctctgtcaa gccagttacc ttcggaaaaaa 1800
gagttggtag ctcttgatcc ggccaaacaaa ccaccgttgg tagcgggtgg tttttgttt 1860
gcaagcggca gattacgcgc agaaaaaaaaa gatctcaaga agatccttg atctttctt 1920
cggggtctga cgctcgttgg aacaaaaact cacgttaagg gatttggtc atgagattat 1980
aaaaaaggat cttcacctat atccctttat cggtgtagaa taccgcacag atgcgtaaagg 2040
agaaaaatacc gcatcagggaa attgttaagcg ttaataatc agaagaactc gtcaagaagg 2100
cgatagaagg cgatgcgtt cgaatcgggg gcccgcatac cgttaagcagc gaggaagcgg 2160
tcagcccatc cgccgccaatc ctcttcgtca atatcacggg tagccaaacgc tatgtctga 2220
tagcggtccg ccacaccatc cggccacag tcgtatgcata cagaaaagcg gccattttcc 2280
accatgatc tcggcaagca ggcatcgcca tgggtcacga cgagatcctc gccgtcgcc 2340
atgctcgctt tgagcctggc gaacagttcg gtcggcgca gcccctgtatc ttcgtcttcc 2400
agatcatctt gatcgacaatc accggcttcc atccgagatc gtgtcgctc gatgcgtatgt 2460
ttcgcttggt ggtcgatgg gcaggttagcc ggatcaagcg tatgcagccg ccgcatttgca 2520
tcagccatga tggatacttt ctccggcaggaa gcaagggttag atgacaggag atccgtcccc 2580
ggcacttcgc ccaatagcg ccagtccctt cccgcgttca gtcacacgtc gagcacagct 2640
gogcaaggaa cggccgtcg ggcagccac gatagcccg ctgcgtcgatc ttgcgttca 2700
ttcaggccac cggacaggatc ggtcttgcata aaaagaaccc ggcggccctg cgctgacagc 2760
cgaaacacgg cggcatcaga gcaagccattt gtcgttgc cccagtcata gcccgaatagc 2820
ctctccaccc aagcggccgg agaacctcgat tgcaatccat ctgttcaat catgcgaaac 2880
gatcctcattc ctgtctttt atcagagatc gatccctgc gccatcagat cttggccgc 2940
gagaaaagcca tccagttat tttgcaggcc ttgtcaacct taccagataa aagtgcctat 3000
cattggaaaa cgttcaatcc tgaggccggaa agaaccagct gtcgttgc gtcgttgc 3060
ggtgtggaaa gtccccaggc tcccccaggc gcaagaatgtat gcaaaagcatc catctcaatt 3120
agttagcaac cagggtgtgg aagtccccag gtcggcccgatc aggcagaatgt atgcggaaagca 3180
tgcgtatcttcaat ttagtcgtca accatgtcc cggcccttacatc cccggccctaa 3240
ctccggccatc ttccggccat tccggcccc atggctgtact aattttttt atttatgcag 3300
agggcgagcc cgcctcgcc tctgtatctt tccagaagta gtcggccgtt tttttggag 3360
gcctaggctt ttgcggaaaatc tttgtattttt ctgacacaac agtctcgaaatc ttaaggctat 3420
agccaccatgtt attgcgtatgtt cgcgttccatc cccggccctaa 3480

gctattcgcc	tatgactggg	cacaacagac	aatcggtcgc	tctgatgccg	ccgtgttccg	3540
gctgtcagcg	caggggcgcc	cggttcttt	tgtcaagacc	gacctgtccg	gtgcctgaa	3600
tgaactgcag	gacgaggcgag	cgccgctatc	gtggctggcc	acgacggcg	ttccttcgc	3660
agctgtgctc	gacgttgtca	ctgaagcggg	aagggactgg	ctgtatttg	gogaagtgcc	3720
ggggcaggat	ctcctgtcat	ctcacccgtc	tcctgcccgg	aaagtatcca	tcatggctga	3780
tgcaatgcgg	cggctgcata	cgccttgcattc	ggcttacccgc	ccattcgacc	accaaggcga	3840
acatcgcatc	gagcgagcac	gtactcggt	ggaagccgg	cttgcgtatc	aggatgatct	3900
ggacgaagag	catcaggggc	tcgcgcage	cgaactgttc	gccaggetca	aggcgccat	3960
gccccacggc	gaggatctcg	tcgtgacc	tggcgatgcc	tgcttgcga	atatcatgg	4020
ggaaaatggc	cgctttctg	gattcatcga	ctgtggccgg	ctgggtgtgg	cggaccgcta	4080
tcaggacata	gcgttggcta	cccggtat	tgctgaagag	cttggcgccg	aatggctga	4140
ccgcttcctc	gtgtttacg	gtatcgccgc	tcccgattcg	cagcgcatcg	ccttctatcg	4200
ccttcttgac	gagccattct	gctggatggc	tacaggtcgc	agccctggcg	tcgtgattag	4260
tgatgtgaa	ccaggttatg	accttgcatt	attttgcata	cctaatttatt	atgctgagga	4320
tttggaaagg	gtgtttattc	ctcatggact	aattatggac	aggactgaac	gtcttgcctg	4380
agatgtgatg	aaggagatgg	gaggccatca	cattgttagcc	ctctgtgtgc	tcaagggggg	4440
ctataaattc	tttgcgtacc	tgctggatta	catcaaagca	ctgaatagaa	atagtatag	4500
atccatttcct	atgactgttag	attttattcag	actgaagagc	tattttaatg	accagtaac	4560
aggggacata	aaagtaattt	gtggagatga	tctctcaact	ttaacttgaa	agaatgtctt	4620
gattgtggaa	gatataattt	acactggcaa	aacaatgcag	actttgcctt	ccttggctag	4680
gcagtataat	ccaaagatgg	tcaaggtcgc	aagctgtcg	gtgaaaagga	ccccacaaag	4740
tgttggat	aagccagact	ttttggatt	tgaaattcca	gacaagttt	ttttagata	4800
tgcccttgac	tataatgaat	acttcaggga	tttgaatcat	gttgcgtca	tttagtggaaac	4860
tggaaaagca	aaatacacaag	cctaagcgcc	cgctaacctg	gttgcgtact	aatttggatg	4920
catgcttgc	atacttcgc	ctgtgggg	gcctggggac	tttccacacc	ctaactgaca	4980
cacattccac	agctgggtct	ttccgcctca	gaaggtacac	aggcgaaattt	gtaagcgta	5040
atattttgtt	aaaattcgcg	ttaaattttt	gttaaatcag	ctcatttttt	aaccaatagg	5100
ccgaaatcg	aaaaatccct	tataaatcaa	aagaatagac	cgagataggg	ttgagttgtt	5160
ttcagtttgc	gaacaagagt	ccactattaa	agaacgtgga	ctccaaacgtc	aaaggcgaa	5220
aaaccgtcta	tcagggcgat	ggcccac				5247

<210> 21
<211> 5382
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (890)
<223> a, c, t, g, other or unknown

<220>
<221> modified_base
<222> (1042)
<223> a, c, t, g, other or unknown

<400> 21
cacctaaattt gtaagcgta atattttgtt aaaattcgcg ttaaattttt gttaaatcag 60
ctcattttttt aaccaatagg ccgaaatcg 120
cgagataggg ttgagttgtt ttccagtttga acacaagagt ccactattaa agaacgtgga 180
ctccaaacgtc aaaggcgaa aaaccgtcta tcagggcgat gcccactac gtgaaccatc 240
accctaaatca agtttttgg ggtcgaggtg ccgtaaagca ctaaatcgga accctaaagg 300
gagccccgaa tttagagctt gacggggaaa gcccgcgaac gtggcgagaa aggaaggaa 360
gaaagcgaaa ggagcgccgct ggcaagtgtt ggggtcacgc tgcgcgttaac 420
caccacaccc gccgcgtta atgcgcgcg acagggcgcc tccatttcgc cattcaggct 480
gcgcaactgt tgggaagggc gatcggtgcg ggcctttcg ctattacgac agctggcgaa 540

agggggatgt gctgcaaggc gattaagtt ggtaacgcca gggtttccc agtcacgacg 600
ttgtaaaacg acggccagt aattgtata cgactcacta tagggcgaat tgggtacaat 660
tcaattcgctc gacctcgaaa ttctaccggg taggggaggg cgtttccca aggcagtcg 720
gagcatgcgc ttttagcagcc ccgctggca ctggcgcta cacaagtggc ctctggcctc 780
gcacacattc cacatccacc gtagggcgcc aaccggctcc gttcttttgt ggccccctcg 840
cgccacccctc tactcctccc ctatcgagga agttcccccc cgcccccgcg ctcgcgtcgt 900
gcaggacgtg acaaatggaa atagcacgtc tcactagtct cgtcagatg gacaaggacc 960
gctgagcaat ggagcgggta ggcctttggg gcagcggcca atagcagctt tgctccttcg 1020
cttctgggc tcagaggctg gnaaggggtg ggtccggggg cgggctcagg ggcgggctca 1080
ggggggggc ggggccccga aggtcctccg gaggccccgc attctgcacg cttcaaaagc 1140
gcacgtctgc cgcgctgttc tcctcttct catctccggg ctttcgacc tgcatccatc 1200
tagatctcgta gcagctgaag cttaccatga ccgagtacaa gccacacggc cgcctcgcca 1260
cccgcgacga cgtccccccgg gccgtacgca ccctcgccgc cgcttcgccc gactaccccg 1320
ccacgcgcca caccgtcgac ccggaccggc acatcgagcg ggtcaccgag ctgcaagaac 1380
tcttcttcac ggcgctcggg ctgcacatcg gcaagggtgt ggtcgggac gacggcggccg 1440
cggtggcggt ctggaccacg ccggagagcg tcgaagcggg ggcgggttgc gccgagatcg 1500
gcccgcgcat ggccgagtt agccgttccc ggctggccgc gcaccaacag atggaaaggcc 1560
tcctggcgcc gcaccgggccc caaggagccc gctgtttcc ttggcccacc gtcgggctc 1620
ttcggccgac caccagggca aggtctggc aagcgcgtc gtgtcccccg gatggagggc 1680
ggccgagcgc gccgggggtgc ccgccttctt ggagacccctc ggcggccgcg acctccctt 1740
ctacgagcgg ctggcctca ccgtcaccgc cgacgtcgag gtgcggcaag gaccgcgcac 1800
ctgtgtcatg acccccaagc ccgtgtccctg acgccccccc caccgaccgcg agcgcggcgc 1860
cgaaaggagc gcacgacccc atgcatcgat ggcactggc aggtaaatgat caaggtagc 1920
gatcttaat attggccatt agccatatta ttcatgtt atatagcata aatcaatatt 1980
ggctattggc cattgcatac gtttatcta tatcataata tgtacatcta tattggctca 2040
tgtccaatat gaccgcattt ttgcattga ttattgtacta gtttataata gtaatcaatt 2100
acggggcat tagttcatag cccatatatag gagttcccg ttacataact tacggtaaat 2160
ggcccgctcg gctgaccggcc caacgacccc cgccatttgc cgtcaataat gacgtatgtt 2220
cccatatgaa cgccaatagg gactttccat tgacgtcaat gggtgagta tttacgtaa 2280
actgcccact tggcagtaca tcaagtgtat catatgcac gtcgcggccccc tattgacgtc 2340
aatgacggta aatggcccgcc ctggcattat gcccagtaca tgacccatcg ggactttct 2400
acttggcagt acatctacgt attgtcatc gctattacca ttgtgtatgcg gttttggcag 2460
tacaccaatg ggcgtggata ggcgtttgac tcacgggat ttccaagtc ccacccatt 2520
gacgtcaatg ggagtttgg tttgcaccaa aatcaacggg acttccaaa atgtcgtaac 2580
aactgcgatc gcccggcccg ttgacgcggg tggcggtag gctgtacgg tggaggtct 2640
atataaggcag agctcgatca gtgaacccgtc agatcactag aagctttt gcggtatgtt 2700
atcacagttt aattgtcaac gcaatcgatg cttctgacac aacagtctcg aacttaagct 2760
gcagtgactc tcttaattaa ccaccgtac aggtgagttc tggatctgc taccttaaga 2820
gaggcctatc tggccagttt gcaatcgaaag aaagaagttt aagagagccg aaacaagcgc 2880
tcatgagccc gaagtggcga gcccgtatctt cccatcggt gatgtcgccg atataggcgc 2940
cagcaaccgc acctgtggcg ccgggtatgc cggccacgtat ggcgtccggcg tagaggatcc 3000
acaggacggg tgggtcgcc atgatcgct agtcgatagt ggctccaatg agcgaagcga 3060
gcaggactgg gcccgggcca aaggcgctgg acagtgtcc gagaacgggt ggcatacgaa 3120
attgcataatcgatca cgcataatagc gctagatctt tgctagatgc gaggccgcca ccgggtggaa 3180
gctccagctt ttgttccctt tagtgagggt taatttcgag ctggcgtaa tcatggctat 3240
agctgtttcc tgggtggaaat ttgttatccgc tcacaattcc acacaacata cgagccggaa 3300
gcataaaatgt taaaggctgg ggtgcctaattt gaggtagacta actcacatata attgcgttgc 3360
gctcaactgcc cgccttccag tggggaaacc tggcgatcc gctgcattaa tgaatcgcc 3420
aacgcgcgggg gagaggcggt ttgcgtattt ggcgtcttc cgcgtccctcg ctcactgact 3480
cgctgcgtcc ggtcggtcg ctgcggcgag cggatccatc tcactcaatg ggcgtatata 3540
ggtttatccac agaatcgagg gataacgcgag gaaagaacat gtgagcaaaa ggccagcaaa 3600
aggccaggaa ccgtaaaaag gcccgttgc tggcggtttt ccataggctc cgcggccctg 3660
acgagcatca caaaaatcgatca cgcgtcaatgc agagggtggcg aaacccgaca ggactataaa 3720
gataccaggc gtttccccctt ggaagctccc tcgtgcgtc tcctgttccg accctggccgc 3780
ttaccggata cctgtccggcc ttctccctt cgggaagcgtt ggcgtttctt catagctac 3840
gctgttaggtt ttcgtatgcg gtgttaggtcg ttcgtccaa gctgggtgtt gtgcacgaac 3900
cccccggttca gcccggaccgc tgccgttccat cggtaacta tgcgtttagt tccaacccgg 3960

taagacacga	cttatacgcc	ctggcagcag	ccactggtaa	caggattagc	agagcgaggt	4020
attaggcgg	tgctacagag	ttcttgaagt	ggtggctaa	ctacggctac	actagaagga	4080
cagtatgg	tatctgcgt	ctgctgaagc	cagttacct	cgaaaaaaa	gttggtagct	4140
cttgatccgg	caaacaacc	accgctggta	gcggtggtt	tttggttgc	aagcagcaga	4200
ttacgcgcag	aaaaaaagga	tctcaagaag	atcccttgat	cttttctacg	gggtctgacg	4260
ctcagtggaa	cgaaaaactca	cgttaaggga	tttggtcat	gagattatca	aaaaggatct	4320
tcacctagat	ccttttaaat	taaaaatgaa	gttttaaatc	aatctaaagt	atatatgagt	4380
aaacttggtc	tgacagttac	caatgctta	tcagtgaggc	acctatctca	gcgatctgtc	4440
tatttcgtt	atccatagtt	gcctgactcc	ccgtcggtta	gataactacg	atacgggagg	4500
gcttaccatc	tggccccagt	gctgcaatga	taccgcgaga	cccacgctca	ccggctccag	4560
atttatcagc	aataaaccag	ccagccggaa	gggcccggcg	cagaagtgg	cctgcaactt	4620
tatccgcctc	catccagtct	attaattgtt	gccccggaa	tagagtaagt	agttcgccag	4680
ttaatagtt	gcgcacacgtt	gttgcattt	ctacaggcat	cgtgggtgtca	cgctcgctgt	4740
tttgtatggc	ttcattcagc	tccggttccc	aacgatcaag	gcgagttaca	tgatccccca	4800
tgttgtgcaa	aaaagcgggt	agtccttcg	gtcctccgat	cgttgcaga	agtaagttgg	4860
cccgagtgtt	atcaactcatg	gttatggcag	cactgcataa	ttctcttact	gtcatgccat	4920
ccgtaagatg	cttttctgtg	actgggtgagt	actcaaccaa	gtcattctga	gaatagtgt	4980
tgcggcgacc	gagttgotct	tgcccgccgt	caatacggga	taataccgcg	ccacatagca	5040
gaactttaaa	agtgcgtatc	attggaaaac	gttcttcggg	gcggaaaactc	tcaaggatct	5100
taccgctgtt	gagatcoagt	tcgatgtaac	ccactcggtc	acccaactga	tcttcagcat	5160
cttttacttt	caccagcgtt	tctgggtgag	caaaaacagg	aaggcaaaaat	gccgcaaaaa	5220
aggaataag	ggcgacacgg	aaatgttcaa	tactcatact	cttcctttt	caatattatt	5280
gaagcattt	tcagggttat	tgtctcatga	gcggatacat	atttgaatgt	atttagaaaa	5340
ataaacaat	aggggttccg	cgcacattc	ccggaaaaagt	gc		5382

<210> 22
<211> 9737
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (8347)
<223> a, c, t, g, other or unknown

<220>
<221> modified_base
<222> (8499)
<223> a, c, t, g, other or unknown

<400> 22
gatcttcaat attggccatt agccatatta ttcatggtt atatagcata aatcaatatt 60
ggctattggc cattgcatac gttgtatcta tatcataata tgtacatttta tattggctca 120
tgtccaaatg gaccggccatg ttggcattga ttattgacta gttattaata gtaatcaatt 180
acggggctat tagttcatag cccatatacg gagttcccggtt acataact tacggtaaat 240
ggcccgctg gctgaccgccc caacgacccc cgccccattga cgtcaataat gacgtatgtt 300
cccatagtaa cgccaatagg gactttccat tgacgtcaat gggtgagta tttacgtaa 360
actgcccact tggcagtaca tcaagtgtat catatgccaat gtcggcccc tattgacgtc 420
aatgacggta aatggccgc ctggcattat gcccagtaca tgaccttacg ggactttcct 480
acttggcagt acatctacgt attagtcatc gctattacca tggtgatgcg gttttggcag 540
tacaccaatg ggcgtggata gcgttttgcac tcacggggat ttccaagtct ccacccatt 600
gacgtcaatg ggagtttggat ttggcaccata aatcaacggg actttccaaa atgtcgtaac 660
aactgcgatc gcccgcggcg ttgacgcaaa tgggcggtag gcgtgtacgg tgggaggtct 720
atataaggcag agtcgttta gtgaaccgtc agatcactga attctgacga cctactgatt 780
aacggccata gaggcctct gcagaactgt cttagtgaca actatcgatt tccacacatt 840
atacgagccg atgttaatttgc tcaacagtc atgcgtacgc tcccgaggc agacaagccc 900

gaccatggct	cgagtaatac	gactcaactat	agggcgacag	gtgagtactc	gctacctaa	960
ggcttatctg	gccgtttaaa	cagatgtgt	taagagacag	ctctcttaag	gtagcctgtc	1020
tcttatacac	atcttagatcc	ttgtctagagt	cgaccaattc	tcatgtttga	cagcttatca	1080
tcgcagatcc	tgagcttgta	tggtgcactc	tcagtacaat	ctgctctgtc	gccgcatagt	1140
taagccagta	tctgtccct	gcttgtgtgt	tggaggtegc	tgagtagtgc	gcgagcaaaa	1200
tttaagctac	aacaaggcaa	ggcttgaccg	acaattgcac	gaagaatctg	cttagggtta	1260
ggcggttgc	gctgtttcgc	gatgtacggg	ccagatatac	gcgtatctga	ggggactagg	1320
gtgtgtttag	gcqcccacgq	ggqcttcggt	tgtacgcggg	taggagtccc	ctcaggatata	1380
agtagtttcg	cttttgacata	gggaggggga	aatgtatgtc	tatgtcaatac	acttgttagtc	1440
ttgcaacatg	gtaacgtatg	gttagcaaca	tgccttacaa	ggagagaaaaa	agcacctgtc	1500
atgccgattg	gtggaaagtaa	gggtgtacga	tcgtgcctta	ttaggaaggc	aacagacagg	1560
tctgacatgg	attggacgaa	ccactgaatt	ccgcattgca	gagataattg	tatthaagtg	1620
cctagctcga	tacaataaac	gccatttgac	cattcaccac	attgggtgtc	acctccaagc	1680
tgggtaccag	ctgcttagct	cgagacgcgt	gatttccttc	gaagcttgc	atggttggtt	1740
cgctaaactg	catcgtcgct	gtgtcccaga	acatgggcat	cgccaaagaac	ggggacctgc	1800
cctggccacc	gctcaggaat	gaattcagat	atttccagag	aatgaccaca	acctcttcag	1860
tagaaggtaa	acagaatctg	gtgattatgg	gtaagaagac	ctggttctcc	atccctgaga	1920
agaatcgacc	tttaaagggt	agaattaatt	tagttctcag	cagagaactc	aaggaacctc	1980
cacaaggagc	tcatttctt	tccagaagtc	tagatgtatc	cttaaaactt	actgaacaac	2040
cagaattagc	aaataaaagta	gacatggct	ggatagttgg	tggcagttct	gtttataagg	2100
aaggccatgaa	tcaccccaggc	catcttaaac	tatttgcac	aaggatcatg	caagacttg	2160
aaagtgcac	gttttttcca	gaaattgtatt	tggagaaata	taaacttctg	ccagaatacc	2220
caggtgttct	ctctgtatgc	caggaggaga	aaggcattaa	gtacaaattt	gaagtatatg	2280
agaagaatgt	taattaaggg	caccaataac	tgccttaaaa	aaattacgac	ccgcccgtcc	2340
actcatcgca	gtactgtgt	aatttcattaa	gcatttcgtcc	gacatggaaag	ccatcacaga	2400
cgccatgtatg	aacctgaatc	gccagcggca	tcagcacctt	gtgccttgc	gtataatatt	2460
tgcctatgtt	gaaaacgggg	gcgaagaagt	tgtccatatt	ggcacgttt	aatcaaaac	2520
tggtaaact	caccctggg	ttggctgaga	cgaaaaacat	atttcataa	aaccctttag	2580
ggaataatggc	cagggttca	ccgttaacacg	ccacatcttgc	cgatataat	tgttagaaact	2640
gcgggaaatc	gtcggttat	tcaatccaga	gcgatgaaaa	cgtttcagtt	tgctcatgga	2700
aaacgggtgt	acaagggtga	acactatccc	atatcaccag	ctcaccgtct	ttcattgcca	2760
tacggaaattc	cgatgagca	ttcatcaggc	gggcaagaat	gtgaaataag	gccggataaa	2820
acttgtgtt	atttttctt	acggtcttta	aaaaggccgt	aatatccagc	tgaacggtct	2880
ggttataggt	acattgagca	actgactgaa	atgcctcaaa	atgttcttta	cgatgcatt	2940
ggatataatc	aacgggtgt	tatccagtga	tttttttctc	catttttagct	tccttagctc	3000
ctgaaaatct	cgataactca	aaaaataacgc	ccggtagtga	tcttatttca	ttatggtgaa	3060
agttggaaacc	tcttacgtgc	cgatcaacgt	ctcattttcg	ccaaattaat	taaggcgcgc	3120
cgctctcctg	gctaggagtc	acgtagaaag	gactaccgac	gaagggactt	gggtcgccgg	3180
tgtgttcgt	tatggaggt	gtaagacctc	ccttacaac	ctaaggcgag	gaactgcct	3240
tgttatttca	caatgtcgct	ttacaccatt	gagtcgtctc	ccctttggaa	tggcccttgg	3300
accgggcccc	caacctggcc	cgetaaggga	gtccattgtc	tgttatttca	tggtctttt	3360
acaaactcat	atatttgcgt	aggttttgaa	ggatgcgatt	aaggacatttgc	ttatgacaaa	3420
gcoccgctcct	acctgcaata	tcaagggtgac	tgtgtgcagc	tttgacgtat	gagtagattt	3480
gcctccctgg	tttccaccta	tggtggaaagg	ggctgcccgc	gagggtgtat	acggagatga	3540
cgagagatgaa	ggaggtgtat	gagatgaggg	tgaggaaggg	caggagtgtat	gtaactgtt	3600
aggagacgcc	ctcaatcgta	ttaaaagccg	tgtattttttc	cgcaactaaag	aataaattccc	3660
cagtagacat	catgcgtgt	gttgggtgtat	ttctggccat	ctgtcttgc	accattttcg	3720
tcotcccaac	atggggcaat	tggcataacc	catgttgcac	cgtcactcag	ctccgcgtc	3780
aacaccttct	cgcggtggaa	aacatttagcg	acatttacat	ggtgagcaat	cagacatgcg	3840
acggctttag	cctggcctcc	ttaaatttac	ctaagaatgg	gagcaaccag	catgcaggaa	3900
aaggacaagc	agcgaaaaatt	cacggccccct	tgggagggtgg	cgccatatacg	aaaggatagc	3960
actcccactc	tactactgg	tatcatatgc	tgactgtata	tgcatacgat	tagcatatgc	4020
tacccggata	cagatttagga	tagcatatac	tacccagata	tagatttagga	tagcatatgc	4080
tacccagata	tagatttagga	tagctatgc	tacccagata	taaatttagga	tagcatatac	4140
tacccagata	tagatttagga	tagcatatgc	tacccagata	tagatttagga	tagctatgc	4200
tacccagata	tagatttagga	tagcatatgc	tacccagata	tagatttagga	tagcatatgc	4260
tatccagata	tttgggtgtat	atatgttacc	cagatataaa	ttaggatagc	ataactacc	4320

ctaatctcta tttaggatagc atatgttacc cgatatacaga ttaggatagc atataactacc 4380
cagatataga tttaggatagc atatgttacc cagatatacaga ttaggatagc ctatgttacc 4440
cagatataaa tttaggatagc atataactacc cagatatacaga ttaggatagc atatgttacc 4500
cagatataga tttaggatagc ctatgttacc cagatatacaga ttaggatagc atatgttacc 4560
cagatatttg ggtatatat gtcacccatg gcaacattag cccacccgtgc tctcagcgac 4620
ctcgtaata tgaggaccaa caaccctgtg ctggcgctc aggccgcaagt gtgtgttaatt 4680
tgtccctccag atcgaccaa tcgcggccct atcttggccc gcccacccatc ttatgcagg 4740
atccccggg gtgccattag tggttttgtg ggcaagtggg ttgaccgcag tggtagcgg 4800
ggttacaatc agccaaggtt ttacaccctt atttacagt cccaaaaccgc agggcggcgt 4860
gtgggggctg acgegtgccc ccactccaca atttcaaaaa aaagagtgcc cacttgcgtt 4920
tgttatggg ccccatggc gtggagcccc gtttaatttt cgggggtgtt agagacaacc 4980
agtggagtcc gctgtgtcg ggttccactc tcttccct ttttacaaat agagtgtaac 5040
aacatggttc acctgttctg gtccctgcct gggacacatc ttaataaccc cagttatcata 5100
ttgcactagg attatgttgc gccatagcc ataaattcg tggagatggg catccagtc 5160
ttacggcttgc tcccccccccc atggatttct attgttaaaag atattcagaa tggttcattc 5220
ctacactagt atttattgtcc caaggggttt gtgagggttta tattgggttc atagcacaat 5280
gcacccactg aaccccccgt cccaaattttt ttctggggc gtcacctgaa accttgcgtt 5340
cgagcacctc acatacacct tactgttccac aactcagcag ttattctatt agctaaacga 5400
aggagaatga agaagcaggc gaagatccag gaggttccac tgcccgctcc ttgatcttca 5460
gcactgccc ttgtactaa aatggttccac taccctcggtt gaaatctgac cccatgtaaa 5520
taaaaaccgtg acagctcatg ggggtgggaga tatcgctgtt ctttaggacc cttttactaa 5580
ccctaattcg atagcatatg ctccctgtt ggttaacatat gctattgtat tagggtagt 5640
ctggatagta tataactacta cccgggaage atatgttacc ctgtttagggt taacaagggg 5700
gccttataaa cactattgtt aatgccttct tgagggtccg ctatcggtt gctacacagg 5760
ccctctgtat tgacgttggt tgacgttccctt gtagtccctc tggggccctg ggaggtacat 5820
gtccccccagc attgggttgc gaggttccgc caagaggatc acataaaaggc aatgttgcgt 5880
tgactccac agactccaa gtcgttccca ggttgcgttcc cactcgtt tggcaaatgt 5940
gcacatccat ttataaggat gtcactaca gtcagagaaac cccttgcgtt ttgggtcccc 6000
ccctgttccac atgtggaaaca gggcccagtt ggcagggtt accaacaac tgaaggatt 6060
acatgcactg ccccaataac aaaacaaaaag cgctctctgtt accagcgaag aaggggcaga 6120
gatgccgttag tcaggtttag ttcgtccggc ggcggccgc cgcaaggcgc gccggatcca 6180
caggacgggt gtggtcgcca tgatcgctt gtcgatagtg gtcctcaagta gcgaagcgg 6240
caggactggg cggccggccaa agcggtcgga cagtgcctcg agaacgggtg cgcatagaaa 6300
ttgcataac gcatatacg ttagatcctt gctagagtcg agatctgtcg agccatgtga 6360
gcacccaggcc agcaaaaaggc caggaaccgt aaaaaggccg ctgttgcgtt gttttccat 6420
aggctccgc cccctgacga gcatcacaaa aatcgacgtt caagtccagag gtggcggaaac 6480
ccgacaggac tataaaagata ccaggcggtt cccctggaa gtcctctgtt gctctcttct 6540
gttccgaccc tgccgttac cgatatacg tccgccttcc tcccttcggg aagcgtggcg 6600
cttctctata gtcacgttgc taggtatctc agttcggtgtt aggtcggttgc ctccaaagctg 6660
ggctgtgtgc acgaaccccc cgttccgttcc gaccgtcgcc cttatccgg taactatcg 6720
cttgacttca acccggttac acacgactta tcgacttgc cagcagccac tggtaacagg 6780
attagcagag cgaggatgtt aggcgggtgtt acagaggatc tgaagtgggtg gcttaactac 6840
ggctacacta gaaggacagt atttggatcc tgcgtctgc tgaagccagt taccttcgg 6900
aaaagagttt gtagcttgc atccggccaa caaaccaccc ctggtagccg tggttttttt 6960
gtttcaagc agcagattac gecagaaaaaa aaaggatctc aagaagatcc ttgtatctt 7020
tctacggggc ctgacgttca gtggaaacgaa aactcacgtt aagggtttt ggtcatgaga 7080
ttatcaaaaa ggtatcttccat ttagatcctt ttatcggtt gaaataccgc acagatgtcg 7140
aaggagaaaaa taccgttca gggaaatgtt gtcgttataa attcggatcc actcgttcaag 7200
aaggcgatag aaggcgatgc gtcgttccatc gggagccggc ataccgttcc gacagggggaa 7260
ggggcgttccatc cttccgttccatc ccaggccggcc acgttccgttccatc gatccggatcc 7320
ctgtatcggttccatc ccaggccggcc acgttccgttccatc gatccggatcc acgttccgttccatc 7380
ttccaccatc atttccgttccatc ccaggccggcc acgttccgttccatc gatccggatcc acgttccgttccatc 7440
gggcgttccatc gcttccgttccatc ccaggccggcc acgttccgttccatc gatccggatcc acgttccgttccatc 7500
gtccagatca tccgttccatc ccaggccggcc acgttccgttccatc gatccggatcc acgttccgttccatc 7560
attttcgttccatc ccaggccggcc acgttccgttccatc gatccggatcc acgttccgttccatc 7620
tgcataccatc atgtggatcc tttccgttccatc ccaggccggcc acgttccgttccatc gatccggatcc acgttccgttccatc 7680
ccccggccatc tccgttccatc ccaggccggcc acgttccgttccatc gatccggatcc acgttccgttccatc 7740

agctgcgcaa ggaacgcccc tcgtggccag ccacgatagc cgcgctgcct cgtcttgcag 7800
 ttcatcagg gcaccggaca ggtcggtctt gacaaaaaga accggggccc cctgcgcgtga 7860
 cagccggAAC acggcggtat cagagcagcc gattgtctgt tgcgtgcataat ccattttgtt caatcatgcg 7920
 tagcctctcc acccaagcgg ccggagaacc tgcgtgcataat ccattttgtt caatcatgcg 7980
 aaacgatcct catcctgtct ctgtatcaga gcttgatccc ctgcgccttc agatccttgg 8040
 cggcgagaaa gccatccagt ttactttgca gggcttgcata accttaccag ataaaagtgc 8100
 tcatacattgg aaaacatcca attcgtgcac ctcgaaattc taccggtag gggaggcgct 8160
 tttcccaagg cagtctggag catggcgctt agcagccccg ctgggcactt ggccgtacac 8220
 aagtggcctc tggcctcgca cacattccac atccaccggg aggcccaac cggctccgt 8280
 ctttgggtggc cccttcgcgc caccctctac tccctccctta gtcaaggaagt tccccccgc 8340
 cccgcancgc gcgtcggtca ggacgtgaca aatggaaata gcacgtctca ctatgtctcg 8400
 gcaagatggac aaggaccgt gaccaatggg gcgggttaggc ctttggggca gggcccaata 8460
 gcagcttgc tccttegttt tctgggtctca gaggctggna aggggtgggt cggggggcgg 8520
 gctcaggggc gggctcaggg gcggggggggc cggccgaagg tcctccggag gcccggcatt 8580
 ctgcacgctt caaaagcgca cgtctgcgc gctgttctcc tcttcctcat ctccgggcct 8640
 ttcgacactgc atccatctag atctcagagca gctgaagctt accatgaccg agtacaagcc 8700
 caagggtgcgc ctgcgccaccc ggcgacgacgt ccccccggcc gtacgcaccc tcggccgcgc 8760
 gttcggccac taccggcaca cggccacac cgtcgacccg gaccggccaca tcgagcggtt 8820
 caacggagctg caagaactct tccctacgcg cgtcggtctc gacatggca aggtgtgggt 8880
 cgccggacgac ggccggcgccgg tgggggtctg gaccacggc gagagcgtcg aagcgggggc 8940
 ggtgttcgccc gagatcgcc cggccatggc cgagttgagc ggttccggc tggccgcgc 9000
 gcaacagatg gaaggccctc tggccggcaca cccggcccaa ggagcccgccg tggttcctt 9060
 gcccaccgtc gggcgtcttc gcccggaccac caggccaaagg gtcggcaag cgccgtcg 9120
 ctcccccggag tggagggggc cggccggcc ggggtggccg ctttccctgga gaccccccgc 9180
 ccccgcaacc tcccccctcta cggccggctc ggcttcacccg tcacccgcga cgtcgagggt 9240
 cccgaaggac cggccacctg gtgcgttgc cggccatggc cggccatggc cccggccac 9300
 gaccggcagc gcccggaccga aaggagcgc cggccatggc ctttcccttgc actgggcagg 9360
 taatgtatcaa ggtttagggc cgttaacctg gttgtctact aatttgcgtt catgtttgc 9420
 atacttctgc ctgttggggc gccttggggac tttccacacc ctaactgaca cacattccac 9480
 agctggttct ttccgcctca gaaggtacac aggccaaatt gtaagcgta atatttgtt 9540
 aaaatttcgcg ttaaatttt gttaaatcag ctcattttt aaccaatagg ccgaaatcg 9600
 caaaaatccct tataaatcaa aagaatagac cggataggg ttgagtgtt gttccagttt 9660
 gaacaagagt ccactattaa agaacgtgga ctccaaacgtc aaaggccgaa aaaccgtcta 9720
 tcagggcgat ggcccac 9737

<210> 23
 <211> 9737
 <212> DNA
 <213> Homo sapiens

<220>
 <221> modified_base
 <222> (8347)
 <223> a, c, t, g, other or unknown

 <220>
 <221> modified_base
 <222> (8499)
 <223> a, c, t, g, other or unknown

<400> 23
 gatcttcaat attggccatt agccatatta ttcatgggtt atatagcata aatcaatatt 60
 ggcttattggc cattgcatac gtttatctt tatcataata tgcataattt tattggctca 120
 tgcataat gacccgcattt ttggcatttga ttattgacta gttattaata gtaatcaattt 180
 acggggtcat tagttcatac cccatatac gatgtccgcg ttacataact tacggtaat 240
 ggccggcctt gctgaccgcg caacgaccgc cggccatttga cgtcaataat gacgtatgtt 300

cccatagtaa cgccaataagg gactttccat tgacgtcaat gggtgaggta tttacggtaa 360
actgcccact tggcagtaca tcaagtgtat catatgccaa gtccgcggcc tattgacgtc 420
aatgacggta aatggcccgctggcattat gcccagtaca tgaccttacg ggactttct 480
acttggcagt acatctacgt attagtcatc qctattacca tqgtgatgcg gtttggcag 540
tacaccaatg ggcgtggata gcgggttgac tcacggggat ttccaagtct ccacccatt 600
gacgtcaatg ggagttgtt ttggcaccaa aatcaacggg actttccaaa atgtcgtaac 660
aactgcgatc gcccggcccg ttgacgcaaa tggggcggtag gcgtgtacgg tgggagggtct 720
atataaggcag agctcggttta gtgaaccgtc agatcactga attctgacga cctactgatt 780
aacggccata gaggcctcct gcagaactgt cttagtgaca actatcgatt tccacacatt 840
atacgagccg atgttaattt tcaacagctc atgcgtacgc tcccgggagc agacaagccc 900
gaccatggct cgagtaatac gactcactat agggcgacag gtgagtagtc gctacctaa 960
ggcctatctg gccgtttaaa cagatgtgta taagagacag ctctcttaag gtagcctgtc 1020
tcttatacac atctagatcc ttgcttagt cgaccaattc tcatgtttga cagtttatca 1080
tcgcagatcc tgagcttgta tggcactc tcagtacaat ctgctctgtc gccgcatagt 1140
taagccagta tctgtccct gcttgtgtgt tggaggtcgc tgtagtagtgc gcgagcaaaa 1200
tttaagctac aacaaggcaa ggcttgaccg acaattgcat gaagaatctg cttagggtt 1260
ggcgtttgc gctgcttcgc gatgtacggg ccagatatac gcgtatctga ggggactagg 1320
gtgtgttttag gcccggcccg gggcttcggc tgtagcgtt taggagtccc ctcaggat 1380
agtagtttcg ctttgcata gggaggggga aatgttagtct tatgcaatac acttgttagtc 1440
ttgcaacatg gtaacgatga gttagcaaca tgccttacaa ggagagaaaa agcaccgtgc 1500
atggcgattt gttggaaatggaa ggttgtacga tcgtgccttta ttaggaaggc aacagacagg 1560
tctgacatgg attggacgaa ccactgaattt ccgcatttgcg gagaataattt tatttaagt 1620
cctagctcgta tacaataaaac gccatttgac cattcaccac atttgtgtgc acctccaagc 1680
tgggtaccag ctgctagctt cgagacgcgt gatttccttc gaagcttgc atggttgtt 1740
cgctaaactg catgtcgct gtgtcccaga acatggcat cggcaagaac ggggacctgc 1800
cctggccacc gctcaggaaat gaatttccatg atttccagag aatgaccaca acctcttcag 1860
tagaaaggtaa acagaatctg gtgattatgg gtaagaagac ctggttctcc attcctgaga 1920
agaatcgacc tttaaagggtt agaattaatt tagttctcag cagagaactc aaggaacctc 1980
cacaaggagc tcattttctt tccagaagtc tagatgatgc cttaaaactt actgaacaac 2040
cagaattagc aaataaaagta gacatggctt ggtatgttgg tggcagttct gttataagg 2100
aagccatgaa tcacccaggc catctttaac tatttgcac aaggatcatg caagacttt 2160
aaagtgacac gtttttcca gaaatttgcatt tggagaaata taaacttctg ccagaataacc 2220
caggtttctt ctctgtatgtc caggaggaga aaggcattaa gtacaaaattt gaagtatatg 2280
agaagaatgt taattaaggg caccataaac tgcctttaaaa aaattacgcc ccgccttgcc 2340
actcatcgca gtactgttgc aatttattaa gcatttgcgc gacatggaaag ccatcacaga 2400
cgccatgtatg aacctgaatc gccagcggca tcagcacctt gtgccttgc gtataatatt 2460
tgcccatgtt gaaaacgggg gcaagaagat tgccttgcattt gcccacgttt aaatcaaaac 2520
tggtaaaactt caccaggaa ttggctgaga cggaaaacat atttcaata aacccttag 2580
ggaaaataggc cagggtttca ccgtAACACG ccacatcttgcg cgaatataatg tggtagaaact 2640
gccccggaaatc gtcgtggat tcaactccaga gcgatggaaa cgtttcagtt tgctcatgga 2700
aaacgggtgtt acaagggtgtt acaactatccc atatcaccat ctcaccgtct ttcattgcca 2760
tacggaaattc cggatgagca ttcatcaggc gggcaagaat gtgaaataaag gcccggataaa 2820
acttgtgtt atttttctt acgttcttta aaaaggccgt aatatccagc tgaacggct 2880
ggttataggt acatttgcac actgactgaa atgcctttaaa atgttcttta cgtatgcatt 2940
gggatataatc aacgggtgtt tatccactgtt ttttttctt catttttagct tccttagctc 3000
ctggaaaatct cgataactca aaaaataacgc ccggtagtgc tcttatttca ttatgggtaa 3060
agtggaaacc tcttacgtgc cgatcaacgt ctcatttgcg ccaaattaat taaggcgcgc 3120
cgctctctgt gctaggagt acgttagaaag gactaccgcg gaaggaaactt gggtcggccgg 3180
tggtttgcgtt tatggaggtt gtaagacccctt ccttacaac ctaaggcgag gaactggccct 3240
tgcattttca caatgtcggtt ttacaccatt gagtcgtctc ccctttggaa tggcccttgg 3300
accggggccca caacctggcc cgctaaggga gtccatgtc tggatatttca tggctttttt 3360
acaaaactcat atatttgtctt aggttttggaa ggatgcgtt aaggaccttgc ttatgacaaa 3420
gccccgttcc accttgcataa tcagggtgc tgcgtgcgc tttgacgtt gatgtttttt 3480
gcctccctgg ttccaccta tgggtggagg gggtgcgcg gagggtgtat acggagatga 3540
cgagatgaa ggaggtgtt gatgtgggg tgaggaaggc caggagtgtt gtaacttgc 3600
aggagacgccc ctcaatcgta taaaagccg tgcattttttt ccactaaag aataaatccc 3660
cagtagacat catgcgtgtt gttgggttat ttctggccat ctgtcttgc accattttcg 3720

tcctcccaac	atggggcaat	tggcataacc	catgttgtca	cgtcaactcag	ctccgcgctc	3780
aacaccttct	cgcggtgaa	aacattagcg	acatttacct	ggtgagcaat	cagacatgcg	3840
acggctttag	cctggccccc	ttaaattcac	ctaagaatgg	gagaaccagg	catgcaggaa	3900
aaggacaaggc	agcgaaaatt	cacgccccct	tgggagggtgg	cggcatatgc	aaaggatagc	3960
actcccaactc	tactactggg	tatcatatgc	tgactgtata	tgcattgagga	tagcatatgc	4020
tacccggata	cagattagga	tagcatatac	tacccagata	tagatttagga	tagcatatgc	4080
tacccagata	tagattagga	tagcctatgc	tacccagata	taaatttagga	tagcatatac	4140
tacccagata	tagattagga	tagcatatgc	tacccagata	tagatttagga	tagcctatgc	4200
tatccagata	tagattagga	tagcatatgc	tacccagata	tagatttagga	tagcatatgc	4260
tatccagata	tttgggtagt	atatgctacc	cagatataaa	tttaggatagc	atatactacc	4320
ctaattctcta	tttaggatagc	atatgctacc	cggatacaga	tttaggatagc	atatactacc	4380
cagatataga	tttaggatagc	atatgctacc	cagatataga	tttaggatagc	ctatgttacc	4440
cagatataaa	tttaggatagc	atatactacc	cagatataga	tttaggatagc	atatgctacc	4500
cagatataga	tttaggatagc	ctatgttacc	cagatataga	tttaggatagc	atatgctacc	4560
cagatatttgc	ggtagtatat	gctacccatg	gcaacattag	cccaaccgtgc	tctcagcgac	4620
ctcgtgaata	tgaggaccaa	caaccctgt	cttggcgtc	aggcgcaagt	qtgtgttaatt	4680
tgttctccag	atcgcagcaa	tcgcgcctt	atcttggccc	gcccacctac	ttatgcaggt	4740
attccccggg	gtgccattag	tggtttgtg	ggcaagtgg	ttgaccgcag	tggtagcg	4800
ggttacaatc	agccaagttt	ttacaccctt	atttacagt	ccaaaaccgc	agggcggcgt	4860
gtgggggctg	acgcgtgccc	ccactccaca	atttcaaaaa	aaagagtggc	cacttgcatt	4920
tgttatggg	ccccattggc	gtggagcccc	gttttaatttt	cgggggtgtt	agagacaacc	4980
agtggagtcc	gctgctgtcg	gctccactc	tcttccctt	tgttacaat	agagtgtaac	5040
aacatggttc	acctgttcc	gtccctgcct	gggacacatc	ttaataaacc	cagtatcata	5100
ttgcactagg	attatgtgtt	gcccatagcc	ataaaatttgt	gtgagatgg	catccagtct	5160
ttacggcttgc	tccccacccc	atggattttt	attgttaaag	atattcagaa	tgtttcattc	5220
ctacactagt	atttatttgc	caaggggttt	gtgagggta	tattgggtgc	atagcacaat	5280
gccaccactg	aaccccccgt	ccaaattttt	ttctggggc	gtcacctgaa	accttgcattt	5340
cgagcaccc	acatacaccc	tactgttcc	aactcagcag	ttattctatt	agctaaacga	5400
aggagaatga	agaagcaggc	gaagattcag	gagagttcac	tgcccgctcc	ttgatcttca	5460
gccactgccc	ttgtgactaa	aatggttcac	taccctcg	gaatcctgac	cccatgtaaa	5520
taaaaccgtg	acagctcatg	gggtgggaga	tatcgctgtt	ccttaggacc	ctttactaa	5580
ccctaattcg	atagcatatg	cttcccggtt	ggttacat	gttattgtt	taggttagt	5640
ctgatagta	tataactacta	cccgaaaagc	atatgctacc	cgtttaggtt	taacaagggg	5700
gccttataaa	cactattgt	aatggccctt	tgagggtcc	cttacgttgc	gctacacagg	5760
ccctctgtat	tgacgttgg	gtacgctccc	gtatgttcc	tggccccc	ggaggtacat	5820
gtccccccagc	attgggtttaa	gagttcagc	caagaggat	acataaaaggc	aatgttgcgt	5880
tgcgtccac	agactgcataa	gtctgttcc	ggatgaaaggc	cactcagtgt	tggcaatgt	5940
gcacatccat	ttataaggat	gtcaactaca	gtcagagaac	ccctttgtt	tgggtcccc	6000
cccggtcac	atgtggaaaca	ggggccagtt	ggcaagttgt	accaaccaac	tgaaggatt	6060
acatgcactg	ccccgaatac	aaaacaaaag	cgcttctcg	accagcgaag	aagggcaga	6120
gatggcgtag	tcaaggttt	ttcgccggc	ggcggggggc	cgcaaggcgc	gccggatcca	6180
caggacgggt	gtggtgc	tgcgtcgta	gtcgatagt	gctccaagta	gcgaagcgc	6240
caggactggg	cgccggccaa	agcggtcg	cagtgcctc	agaacgggt	cgcataaaaa	6300
ttgcataac	gcatatagcg	ctagatcctt	gctagagtgc	agatctgtc	agccatgt	6360
gaaaaggcc	agcaaaaggc	cagaaccgt	aaaaaggcc	cgttgcgttgc	gtttttccat	6420
aggctccgccc	ccccgtacga	gcatcacaaa	aatcgacgct	caagtca	gtggcgaaac	6480
ccgacaggac	tataaagata	ccaggcg	ccccctggaa	gctccctcg	gcgccttcct	6540
gttccgaccc	tgccgcttac	cggatacc	tccgcctt	tcccttcggg	aagcgtggc	6600
ctttctcata	gctca	cgcttgc	taggtatc	agtgcgtgt	aggcgttgc	6660
ggctgtgtgc	acgaacccccc	cggtcagccc	gaccgctgc	ccttatccgg	taactatcg	6720
cttgagtcc	acccggtaag	acacgactt	tgcctactgg	cagcagccac	tggtaacagg	6780
attagcagag	cgaggtatgt	aggcggtgc	acagaggatct	tgaagtgg	gcctaactac	6840
ggctacacta	gaaggacagt	atttggatc	tgcgtctgc	tgaagcc	tacccgttgc	6900
aaaagagttt	gtagcttgc	atccggcaaa	caaaccacc	ctggtagcg	tggtttttt	6960
gtttgcacgc	agcagattac	gcccggaaaa	aaaggatctc	aagaagatcc	tttgatctt	7020
tctacgggg	ctgacgtca	gtggAACGAA	aactcacgtt	aagggat	ggcgtatgaga	7080
ttatcaaaaa	ggatcttac	ctagatcctt	ttatcggtgt	gaaataccgc	acagatgcgt	7140

aaggagaaaa	taccgcatca	ggaaattgtt	agcgtaata	attcagaaga	actcgtaag	7200
aaggcgatag	aaggcgatgc	gctgcgaatc	gggagcggcg	ataccgtaaa	gcacgaggaa	7260
gcgttcagcc	cattcgccgc	caagctttc	agcaatatca	cggtagcca	acgctatgtc	7320
ctgatagcg	tccgccccac	ccagccggcc	acagtcgtat	aatccagaaa	agcggccatt	7380
ttcacccatg	atattcggtca	agcaggcatc	gccatgggtc	acgacgagat	cctcgccgtc	7440
ggcgtgcgtc	gccttgagcc	tggcgaacag	ttcggctggc	gcgagccct	gatgctcttc	7500
gtccagatca	tcctgatcga	caagaccggc	ttccatccga	gtacgtgtc	gctcgatgct	7560
atgttcgtct	tggtgtcga	atgggcagg	agccggatca	agctatgtc	gecgccgcat	7620
tgcatcagcc	atgatggata	cttctcgcc	aggagcaagg	tgagatgaca	ggagatcctg	7680
ccccggca	tcgcccata	gcagccagtc	ccttcccgt	tcagtgcacaa	cgtcgagcac	7740
agctgcgcaa	ggaacgcgg	tctggccag	ccacgatagc	cgcgtgcct	cgtcttgcag	7800
ttcattcagg	gcaccggaca	ggtcgggttt	gacaaaaaga	accggggccc	cctcgctgt	7860
cagccggaa	acggcgccat	cagagcagcc	gattgtctgt	tgtgcccagt	catagccgaa	7920
tagcctctcc	acccaagcgg	ccggagaacc	tgcgtcaat	ccatcttgtt	caatcatgct	7980
aaacgatctt	catcctgtct	tttgcgtcga	gcttgatccc	ctgcgtccatc	agatccttgg	8040
cggcgagaaa	gccatccagt	ttacttttgc	gggcttgc	accttaccag	ataaaagtgc	8100
tcatcattgg	aaaacattca	attcgctgac	ctcgaaattc	tacgggttag	gggaggcgct	8160
tttcccaagg	cagtctggag	catcgcttt	agcagccccg	ctggggcactt	ggcgctacac	8220
aagtggcctc	tggcctcgtca	cacattccac	atccacccgt	aggcgccaa	cggtccgtt	8280
cttgggtggc	cccttcgtcgc	caccccttac	tcctccctta	gtcaggaaat	tccccccgc	8340
ccgcancatc	gcgtcggtca	ggacgtgaca	aatggaaata	gcacgtctca	ctagtcgt	8400
gcagatggac	aagcaccgt	gagaatgg	gcgggttaggc	cttggggca	gcggccaaata	8460
gcagcttgc	tccttcgttt	tctgggtca	gaggctggna	agggggtgggt	ccggggggcgg	8520
gctcaggggc	gggctcagg	gccccgggg	cgccccgaa	tcctccggag	gccccggcatt	8580
ctgcacgctt	aaaaaggcga	cgtctcgcc	gctgttctcc	tcttcctcat	ctccgggcct	8640
ttcgacactgc	atccatctag	atctcgagca	gctgaagttt	accatgaccg	agtacaagcc	8700
cacgggtgcgc	ctcgccaccc	gcgacgacgt	ccccggggcc	gtacgcaccc	tcgcccggc	8760
gttcggcgc	taccccgcca	cgcgcacac	cgtcgacc	gaccggcaca	tcgagcggtt	8820
caccgagctg	caaaactct	tcctcactcg	cgtegggttc	gacatggca	agggtgggt	8880
cgcggacgac	ggcggccgg	tggcggtctg	gaccacccg	gagagcgtcg	aagcggggc	8940
gggttgcgc	gagatcgcc	cgccatggc	cgagttgagc	ggttcccgcc	tggccgcgc	9000
gcaacagatg	gaaggcctcc	tggcgccgca	ccggggccaa	ggagcccg	gggttcctt	9060
gcccacccgtc	gggcgtcttc	gccccaccac	caggcaagg	gtctggcaag	cgccgtcgt	9120
ctcccccggag	tggaggcgcc	cgagcgcgc	gggggtcccc	ccttccttgc	gacctccgc	9180
cccccaacc	tcccttcta	cgagcggtc	ggcttcaccc	tcacccgcga	cgtcgaggt	9240
cccgaaaggac	cgcgcaccc	gtgcgttacc	cgcaaccccg	gtgcgttacg	cccgccccac	9300
gaccggcagc	gccccaccga	aaggagcga	cgaccccatg	catcgatggc	actggcagg	9360
taagtatcaa	ggtttagcgcc	cgctaacc	gttgctact	aatttgatg	catgcttgc	9420
atacttctgc	ctgctgggg	gcctggggac	tttccacacc	ctaactgaca	cacattccac	9480
agctgggtct	ttccgcctca	gaaggtacac	aggcgaaatt	gtaaagcgta	atattttgtt	9540
aaaatcgcg	ttaaatttt	gttaaatcag	ctcattttt	aaccaatagg	ccgaaatcgg	9600
caaaatccct	tataaatcaa	aagaatagac	cgagataggg	ttgagtgtt	ttccagttt	9660
gaacaagagt	ccactattaa	agaacgttga	ctccaacgtc	aaagggcgaa	aaaccgtcta	9720
tcagggcgat	ggccccac					9737

<210> 24
<211> 9871
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (8481)
<223> a, c, t, g, other or unknown

<220>

<221> modified_base

<222> (8633)

<223> a, c, t, g, other or unknown

<400> 24

gatcttcaat attggccatt agccatatta ttcatgggtt atatacgata aatcaatatt 60
ggctattggc cattgcatac gttgtatcta tatcataata tgcataatttta tattggctca 120
tgtccaatat gaccgcattg ttggcattga ttattgacta gttattaata gtaatcaatt 180
acggggtcatt tagttcatag cccatataatg gagttccgcg ttacataact tacggtaaat 240
ggcccgcctg gctgaccgcc caacgacccc cgccccattga cgtaataat gacgtatgtt 300
cccatagtaa cgccaaatagg gactttccat tgacgtcaat gggtggagta tttacggtaa 360
actgcccact tggcagtaca tcaagtgtat catatgccaat gtcgcgcggc tattgacgtc 420
aatgacggta aatggccgcg ctggcattat gcccagtaca tgaccttacg ggactttcct 480
acttggcagt acatctacgt attagtcatc gctattacca tggtgatgcg gttttggcag 540
tacaccaatg ggcgtggata gcgggttgac tcacggggat ttccaagtct ccacccatt 600
gacgtcaatg ggagtttggc ttggcaccaa aatcaacggg actttccaaa atgtcgtaac 660
aactgcgatc gccccccccg ttgacgc当地 tggcggtag gcgtgtacgg tgggaggct 720
atataagcag agctcgatc gtgaaccgtc agatcactga attctgacga cctactgatt 780
aaagatctaa gctagcccg ccaccatggg ccctaaaaag aagcgtaaag tcgccccccc 840
gaccgatgtc agcctgggg acgagctcca cttagacggc gaggacgtgg cgatggcgca 900
tgccgacgcg ctagacgatt tcgatctggc catgttgggg gacggggatt ccccgcccc 960
gggatttacc cccccacgact cccgcgcctt cggcgctctg gatatggccg acttcgagtt 1020
tgagcagatg ttaccgcgt cccttggat tgacgagttc ggtggggat tcaggtgagt 1080
actcgctacc ttaaggccta tctggccgtt taaacagatg tgataaagag acagctctc 1140
taaggtagcc tgcattttat acacatctggc atccctgtca gagtcgacca attctcatgt 1200
ttgacagctt atcatcgac atccctggcgt tgcattgtgc actctcgatc caatctgctc 1260
tgcgtccca tagttaagcc agtatctgtc ccctgtttt gttttggagg tcgctgagta 1320
gtgcgcgagc aaaatttaag ctacaacaag gcaagggtt accgacaatt gcatgaagaa 1380
tctcgatggc gtttagggcgtt ttgcgtgtc tgcgtatgtc cggggccagat atacgctat 1440
ctgagggggac taggggtgtt ttaggcgc当地 agcggggctt cgggtgtacg cggtaggag 1500
tccccctcagg atatagtagt ttgcgtttt cataggagg gggaaatgtt gtcttatgca 1560
atacacttgt agtctgcaa catggtaacg atgagttacg aacatgcctt acaaggagag 1620
aaaaaagcacc gtgcattgc当地 attggggaa gtaagggtt acgatcgatc cttattagga 1680
aggcaacaga caggctcgac atggattggc cgaaccactg aattccgc当地 tgcagagata 1740
attgtatata agtgccttagc tgcataacaat aaacgc当地 tgc当地 ccacatttgg 1800
gtgcacccctt aagctggta ccagctgtca gcctcgagac gctgtatcc cttcgaagct 1860
tgtcatgggtt gtttcgttactgc当地 tgc当地 cagaacatgg gcatcgca 1920
gaacggggac ctggccctggc caccgc当地 gaatgaattc agatattcc agagaatgac 1980
cacaacccctt tcaatggaaat gtaaaacagaa tctgggttactgc当地 atgggttactgc当地 agacctgggtt 2040
ctccattccct gagaagaatc gacctttaaa gggtagaaatt aatttagttc tcagcagaga 2100
actcaaggaa cttccacaag gagctcattt tttccaga agtcttagatg atgcctt 2160
acttactgaa caaccagaat tagcaaataa agtagacatg gtctggatag ttggggcag 2220
ttctgtttat aaggaagcca tgaatcacc cggccatctt aaactatttgc当地 tgacaaggat 2280
catgc当地 agac tttgaaatgtt acacgtttt tccagaaatt gattggaga aatataaact 2340
tctgccc当地 taccgggtt ttctctctgc当地 tgc当地 gagaaaggca ttaagtacaa 2400
atttgaagta tatgagaaga atgttaatta agggccaccaa taactgcctt aaaaaaatttta 2460
cgccccggcc tgc当地 cgc当地 tgc当地 ttgtatc当地 ttaagcattc tgccgacatg 2520
gaagccatca cagacggcat gatgaacctg aatcgccatc ggc当地 cgc当地 cttgtcgcc 2580
ttgc当地 tatttggccat tggaaaatggc当地 gggggc当地 aagttgtcc当地 tattggccac 2640
gtttaaatca aactctggta aactccaccc gggattggct gagacgaaaa acatattctc 2700
aataaaccct ttagggaaat aggccagggtt ttcaccgtt caccgc当地 cttgc当地 aata 2760
tatgtgttaga aactgc当地 aatcgctgtt gtatttactc cagacgatg aaaaacgtttc 2820
agtttgc当地 tggaaaatggc当地 tgc当地 aactcaatc tccatatac ccagctcacc 2880
gtcttccattt gccatc当地 atccggatg agcatttactc aggoggccaa gaatgtgaat 2940
aaaggccgatg taaaacttgt gcttattttt cttacggc当地 tttaaaaggccgtaatatac 3000
cagctgaaacg gtctgggttactgc当地 agtacatttgc当地 tgaatgcctt caaaatgttc 3060
tttacgtatc cattgggata tatcaacggc当地 ggtatatttgc当地 tctccattttt 3120

agtttcctta gtcctgaaa atctcgataa ctcaaaaaat acggccggta gtgatcttat 3180
ttcattatgg tgaaggtagg aaccttacat gtcgcgtat acgttcatt ttgcctaaat 3240
taattaaggc gcgcgcctct cctggctagg agtcacgtag aaaggactac cgacgaagga 3300
acttgggtcg ccggtgtgtt cgtatatggg ggtagtaaga cttcccttta caacctaagg 3360
cgaggaactg cccttgcata tccacaatgt cgtttacac cattgagtgc tctcccttt 3420
ggaatggccc ctggaccgg cccacaaccc ggcccgtaa gggagtccat tgtctgttat 3480
ttcatggctct ttttacaaac tcataatattt gctgagggtt tgaaggatgc gattaaggac 3540
cttggttatga caaagccccgc tcctacactgc aatatcaggg tgactgtgtg cagctttgac 3600
gatggagtag atttgcctcc ctgggttcca cctatgggtt aaggggctgc cgccggagggt 3660
gatgacggag atgacggaga tgaaggaggt gatggagatg agggtgagga agggcaggag 3720
tgatgttaact tggtaggaga cgcctcaat cgtattaaaaa gccgtgtatt ccccccgcact 3780
aaagaataaaa tccccagtag acatcatgcg tgctgttggt gtatttctgg ccatctgtct 3840
tgtcaccatt ttgcgttcc caacatgggg caattggca taccatgtt gtcacgtcac 3900
tcagctccgc gctcaacacc ttctcggtt ggaaaacatt agcgacattt acctggtgag 3960
caatcagaca tgcgacggct ttagcctggc ctccttaaat tcacctaaga atgggagcaa 4020
ccagcatgca ggaaaaggac aagcagcgaa aattcagcc cccttggag gtggcggcat 4080
atgcaaaagga tagcactccc actctactac tgggtatcat atgtgtactg tatatgcatt 4140
aggatagcat atgctacccg gatacagatt aggatagcat atactaccca gatatagatt 4200
aggatagcat atgctaccca gatatagattt aggatagcat atgctaccca gatataaattt 4260
aggatagcat atactaccca gatatagattt aggatagcat atgctaccca gatatagattt 4320
aggatagctt atgctaccca gatatagattt aggatagcat atgctaccca gatatagattt 4380
aggatagcat atgctatcca gatattttggg tagtatatgc taccatgc taaatttagga 4440
tagcatatac taccataatc tctatttagga tagcatatgc taccatgc cagatttagga 4500
tagcatatac taccatgc taccatgc taccatgc taccatgc tagatttagga 4560
tagctatgc taccatgc taaatttagga tagcatatac taccatgc tagatttagga 4620
tagcatatgc taccatgc tagatttagga tagcctatgc taccatgc tagatttagga 4680
tagcatatgc taccatgc tttgggttgtt atatgcattt catggcaaca ttagccacc 4740
gtgtctcgat cgacctcgat aatatggaa ccaacaaccc tggcttggc gtcaggcgc 4800
aagtgtgtgt aatttgcctt ccagatgcgca gcaatcgcc ccctatctt gcccgcac 4860
ctacttatgc aggtatccc cgggggttca ttagtgggtt tggggcaag tggtttgacc 4920
gcagtggta gccccgttac aatcagccaa gttattacac ctttatttttta cagtcacaaa 4980
ccgcaggcgc gctgtgggg gctgacgcgt gccccactc cacaatttca aaaaaaagag 5040
tggccacttg tctttgttta tggggcccat tggcgtggag cccctttaa ttttggggg 5100
tggtagagac aaccagtggc gtcggctgtt gtcggcgcc actcttttcc ccccttgcatt 5160
aaatagatgt taacaacatg gttcacctgt ctgggtccct gcctggaca catcttaata 5220
accccagtat catattgcac taggattatg tggccat accataaat tcgtgtgaga 5280
tggacatcca gttttacgg cttgtccccca ccccatggat ttctattgtt aaagatattc 5340
agaatgtttc attcttacac tagtattttat tgcccaaggg gtttggagg gttatattgg 5400
tgtcatagca caatgcacc actgaacccc cctgtccaaat tttattctgg gggcgccacc 5460
tgaaacccctt ttttcgagca cctcacatac accttactgt tcacaactca cagtttattc 5520
tattagctaa acgaaggaga atgaagaagc aggcaagat tcaggagagt tcactgccc 5580
ctcccttgatc ttcaaggact gcccctgtt ctaaaatggt tcactaccct cgtggatcc 5640
tgaccccatg taaaataaaac cgtgacagct catgggggtt gagatatcgc tggctttag 5700
gaccctttta ctaaccctaa ttcatgtatc tatgtttccctt gttgggttac atatgttatt 5760
gaatttaggt tagtctggat agtataatact actaccggg aagcatatgc taccctttta 5820
gggttaacaa gggggctta taaacactat tgctaatttgc ctgggtggg tccgttattc 5880
ggtagctaca caggccccctc tgattgacgt tggtgttagcc tccctggcc 5940
cctggggaggt acatgtcccc cagcattgtt gtaagagctt cagccaaagag ttacacataa 6000
aggcaatgtt gtgttgcagt ccacagactg caaagtgc tccaggatga aagccactca 6060
gtgttggcaa atgtgcacat ccattataa ggatgtcaac tacagtcaaa gaacccttt 6120
gtgtttggtc ccccccgtt tcacatgtgg aacaggcccc agttggcaag ttgtaccaac 6180
caactgaagg gattacatgc actgccccga atacaaaaca aaagcgctcc tggatcc 6240
gaagaagggg cagagatgcc gtgtcaggt ttgttgc tggccggccgg cggccgcac 6300
gcccgcggaa tccacaggac ggggtgtggc gccatgtatc cgtgtcgat agtggctcca 6360
agttagcgaag cgagcaggac tggccggccgg ccaaagcggtt cggacagtgc tccgagaacg 6420
ggtgcgcatc gaaatttgcattt caacgcataat agcgcttagat cttgtctaga gtcgagatct 6480
gtcgagccat gtgagcaaaa gggcagcataa aggccaggaa cctgtttttt gcccgttgc 6540

tggcgtttt	ccataggctc	cgccccctg	acgagcatca	aaaaaatcga	cgctcaagtc	6600
agaggtggcg	aaacccgaca	ggactataaa	gataccaggc	gttccccct	ggaagctccc	6660
tcgtgcgtc	tcctgttccg	accctgccc	ttaccggata	cctgtccgccc	tttctccctt	6720
cggaaggcg	ggcgcttct	catagctcac	gctgttaggt	tctcagttcg	gtgttaggtcg	6780
ttcgctccaa	gctgggctgt	gtgcacgaac	ccccgtca	gcccgacccgc	tgcgccttat	6840
ccgtaacta	tcgtcttgag	tccaaacccgg	taagacacga	cttatcgcca	ctggcagcag	6900
ccactggtaa	caggattagc	agagcgaggt	atgttaggccc	tgctacagag	ttcttgaagt	6960
ggtggctaa	ctacggctac	actagaagga	cagtatttgg	tatctgcgtc	ctgctgaagc	7020
cagttacctt	cgaaaaaaa	gttggtagct	cttgatccgg	caaacaacc	accgctggta	7080
gcgggtgtt	tttgtttgc	aagcagcaga	ttacgcgcag	aaaaaaaggaa	tctcaagaag	7140
atccttgc	ctttctacg	gggtctgacg	ctcagtggaa	cgaaaaactca	cgttaaggga	7200
tttggtcat	gagattatca	aaaaggatct	tcaccta	gttgcgttac	gtgtgaaata	7260
ccgcacagat	gcgttaaggag	aaaataccgc	atcaggaat	tgtaagcggtt	aataattcag	7320
aagaactcg	caagaaggcg	atagaaggcg	atgcgctcg	aatccggagc	ggcgataccg	7380
taaagcacga	ggaagcggtc	agcccatcg	ccgccaagct	cttcagcaat	atcacggta	7440
gccaacgcta	tgtcctgata	gcggccgc	acacccagcc	ggccacagtc	qatqaatcca	7500
gaaaagcggc	cattttccac	catgatattc	ggcaagcagg	catcgccatg	ggtcacgacg	7560
agatcctcg	cgtcgggcat	gctcgccctt	agcctggcg	acagttcg	tggcgcgagc	7620
ccctgatgt	ttcgtccag	atcatctga	tcgacaagac	cggttccat	ccgagttacgt	7680
gctcgctcg	tgcgttgtt	cgcttgggt	tcgaatgggc	aggttagccgg	atcaagcgta	7740
tgcagccgccc	gcatttgcattc	agccatgtat	gatacttct	cgccaggagc	aaggtagat	7800
gacaggagat	cctgccccgg	cacttcgccc	aatagcagcc	agtcccttcc	cgcttcagt	7860
acaacgtcg	gcacagctgc	gcaaggaacg	cccgctgtgg	ccagccacga	tagccgcgt	7920
gcctcgctt	gcagttoatt	cagggcaccg	gacaggtcg	tcttgacaaa	aagaaccggg	7980
cgcccctcg	ctgacagccg	gaacacggcg	gcatcagagc	agccgattgt	ctgttgcgc	8040
cagtcatagc	cgaatagct	ctccacccaa	gcggccggag	aacctgcgt	caatccatct	8100
tgttcaatca	tgcgaaacga	tcctcatctt	gtctcttgc	cagagtttga	tccctgcgc	8160
catcagatcc	ttggcgccga	gaaagccatc	cagtttactt	tgcagggtctt	gtcaacccta	8220
ccagataaaa	gtgctcatca	ttgaaaaca	ttcaattcgt	cgacccctgaa	attctaccgg	8280
gttagggagg	cgcttttccc	aaggcagtct	ggagcatcg	ctttagcagc	cccgctggc	8340
acttggcgct	acacaagtgg	cctctggctt	cgcacacatt	ccacatccac	cggttaggc	8400
caaccggctc	cgttcttgg	tggccccc	gcccacctt	ctactctcc	cctagtccagg	8460
aagttccccc	ccgcccccgca	nctcgctcg	tgccaggacgt	gacaaatgg	aatagcacgt	8520
ctcaactgc	tcgtgcagat	ggacaaggac	cgctgagcaa	tggagcgggt	aggccttgg	8580
ggcagccggcc	aatagcagct	ttgctcttcc	gcttcttgg	ctcagaggct	ggnaagggt	8640
gggtccgggg	gcgggctcg	ggggcggttc	agggcggggg	cgggcgcccg	aaggtctcc	8700
ggaggccccc	cattctgcac	gcttcaaaag	cgcacgctcg	ccgcgtctt	ctcccttcc	8760
tcatctccgg	gccttgcac	ctgcatccat	ctagatctcg	ageagctgaa	gcttaccatg	8820
accaggatca	agccccacgg	gcccctegcc	accccgacg	acgtcccccg	ggccgtacgc	8880
accctcgccg	ccgcgttgc	cgactacccc	gcaacgcgc	acacccgtcg	cccgaccgc	8940
cacatcgagc	gggtcacccg	gctgcaagaa	ctcttcctca	cgccgcgtcg	gctcgacatc	9000
ggcaagggt	gggtcgccg	cgacggcgcc	gcccgtgggg	tctggaccac	gccggagagc	9060
gtcaaggcg	gggcgggtgt	cgccgagatc	ggcccgcgca	tggccgagtt	gagcggttcc	9120
cggctggccc	cgcagcaaca	gatggaaaggc	ctccctggcg	cgcaacccggc	ccaaggagcc	9180
cgcgtggttc	cttggccac	cgtcgggctg	cttgcggcga	ccaccaggag	aagggtctgg	9240
caagcgccgt	cgtgtcccc	ggagtggagg	cgcccgagcg	cgccgggggt	cccgcttcc	9300
tggagacctc	cgcgccccgc	aacctccctt	tctacgagcg	gctcggttcc	accgtcaccg	9360
ccgacgtcg	ggtgcggaa	ggaccggcg	cctggtgcat	gacccgcaag	cccggtgcct	9420
gaccccccgc	ccacgacccg	cagcgcccg	ccgaaaggag	cgacacgaccc	catgcacg	9480
tggactggg	caggtaagta	tcaagggttag	cgcccgctaa	cctgggttgc	gactaattga	9540
gatgcatgt	ttgcataactt	ctgcctgctg	gggagctgg	ggactttcca	cacccttaact	9600
gacacacatt	ccacagctgg	ttcttccgc	ctcagaaggt	acacaggcg	aattgttaagc	9660
gttaatattt	tgttaaaatt	cgcgttaaat	ttttgttaaa	tcaagtcatt	ttttaaccaa	9720
taggcccggaa	tcggcaaaaat	cccttataaaa	tcaaaaagaat	agacccgagat	agggttgagt	9780
gttggccgg	tttggaaacaa	gagtccacta	ttaaagaacg	tggactccaa	cgtcaaagg	9840
cgaaaaaccg	tctatcaggc	cgatggccca	c			9871

<210> 25
<211> 10060
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (8670)
<223> a, c, t, g, other or unknown

<220>
<221> modified_base
<222> (8822)
<223> a, c, t, g, other or unknown

<400> 25

gatcttcaat attggccatt agccatatta ttcatgggtt atatacgata aatcaatatt 60
ggcttattggc cattgcatac gttgtatcta tatcataata tgtacattta tattggctca 120
tgtccaatat gaccgcattt ttggcattga ttattgacta gttattaata gtaatcaatt 180
acggggtcatt tagttcatag cccatataatg gagttcccgcg ttacataact tacggtaaat 240
ggccccgcctg gctgaccgccc caacgacccc cgccccatttga cgtaataat gacgtatgtt 300
cccatagtaa cgccaaatagg gactttccat tgacgtcaat gggtgagta tttacggtaa 360
actgcccact tggcagttaca tcaagtgtat catatgccaa gtcggccccc tattgacgtc 420
aatgacggtt aatggccgc ctggcattat gcccagttaca tgaccttacg ggactttcct 480
acttggcagt acatctacgt attagtcatc gctattacca tggtgatgcg gttttggcag 540
tacaccaatg ggctgtggata ggggtttgac tcacggggat ttccaagtct ccacccatt 600
gacgtcaatg ggagttttt ttggcaccaa aatcaacggg actttccaaa atgtcgtaac 660
aactgcgttgc gcccccccg ttgacgcaaa tggggcgttag gctgtacgg tgggaggctt 720
atataaggcag agtcgttta gtgaaccgtc agatcactga attctgacga cctactgtt 780
aacggccaga tctaagcttag cttcctgaaa gatgaagcta ctgtcttcta tcgaacaaggc 840
atgcgtatatt tgccgactta aaaagctcaa gtgtccaaa gaaaaaccga agtgcgcca 900
gtgtctgaag aacaactggg agtgtcgctt ctctccaaa accaaaagggt ctccgtgac 960
tagggcacat ctgacagaag tggaaatcaag gctagaaaaga ctggaaacagc tatttctact 1020
gatttttctt cgagaagacc ttgacatgtat tttgaaaatg gatttttac aggtataaaa 1080
agcattgtta acaggattat ttgtacaaga taatgtgaat aaagatgccg tcacagatag 1140
atggcttca gtggagactg atatgcctt aacattgaga cagcatagaa taagtgcgac 1200
atcatcatcg gaagagagta gtaacaaagg tcaaagacag ttgactgtat cgccggaaatt 1260
caggtgagta ctcgttaccc taaggcctat ctggccgtt aaacagatgt gtataagaga 1320
cagctctttt aaggttagct gtctttata cacatctaga tccttgctag agtcgaccaa 1380
ttctcatgtt tgacagctt tcatcgacaa tcctgagctt gtatggtgca ctctcgtac 1440
aatctgtctt gtcgtccat agttaagccca gtatctgtc cctgtttgtg tggggagg 1500
cgctgagtag tgcgcgagca aaatttaaatc tacaacaagg caaggcttga cccacaattt 1560
catgaagaat ctgttttaggg ttaggcgtt tgcgtctt cgcgtatgtc gggccagata 1620
tacgcgtatc tgagggact aggggtgttt taggcggccca gccccccctt ggttgcac 1680
ggttaggagt cccctcagga tatagtagtt tcgttttgc atagggaggg gaaatgttag 1740
tcttatgcaat tacacttgc tgcgttgcac atggtaacga tgtagttac acatgcctt 1800
caaggagaga aaaagcacccg tgcgttgcga ttgggtggaa taaggtggta cgatcggtcc 1860
ttatttagaa ggcaacagac aggtctgaca tggattggac gaaccactga attccgcatt 1920
gcagagataa ttgtatatttgc tgcgttgcac agtgcgttgc cctcgagacg cgtgatttcc 1980
cacattgggtg tgcacccca agtgggttgc cagctgttttgc cctcgagacg cgtgatttcc 2040
ttcgaaaggctt tgcgttgc tgcgttgc tgcgttgc tgcgttgc tgcgttgc tgcgttgc 2100
catcgccaaag aacggggacc tgcgttgc tgcgttgc tgcgttgc tgcgttgc tgcgttgc 2160
gagaatgacc acaacccctt cgttgcgttgc taaacagaaat tgggtgatccat tgggttgc 2220
gacctgggttccatccctt tgcgttgc tgcgttgc tgcgttgc tgcgttgc tgcgttgc 2280
cagcagagaa ctcaaggaaac tgcgttgc tgcgttgc tgcgttgc tgcgttgc tgcgttgc 2340
tgcgttgc tgcgttgc tgcgttgc tgcgttgc tgcgttgc tgcgttgc tgcgttgc 2400

tggtggcagt tctgtttata aggaaggccat gaatcaccca ggcacatctta aactatttgt 2460
gacaaggatc atgcaagact ttgaaagtga cacgttttt ccagaaattg atttggagaa 2520
atataaaactt ctgccagaat acccagggtt tctctctgtat gtcaggagg agaaaggcat 2580
taagtacaaa tttgaagttat atgagaagaa tgtaattaa gggcaccaat aactgcctta 2640
aaaaaaattac gccccggccct gccactcatc gcagtaactgt tgtaattcat taagcattct 2700
gcgcacatgg aagccatcac agacggcatg atgaacctga atgcgcagcg gcatcagcac 2760
cttgcgcct tgcgtataat atttgcccat ggtgaaaacg gggcgaaga agttgtccat 2820
attggccacg tttaaatcaa aactggtgaa actcacccag ggattggctg agacgaaaaa 2880
catattctca ataaaccctt tagggaaata ggccagggtt tcacccgtaac acgcacacatc 2940
ttgcgaatat atgtgttagaa actgcggaa atgcgtgtgg tattcactcc agagcgatga 3000
aaacgttca gtttgcctcat ggaaaacggt gtaacaaggg tgaacactat cccatatcac 3060
cagctcaccg tcttcattt ccatacgaa ttccggatga gcattcatca ggcggcaag 3120
aatgtgaata aaggccggat aaaacttgtg cttattttc ttacgggtct taaaaaaggc 3180
cgtaatatcc agctgaacgg tctgggtata ggtacattga gcaactgact gaaatgcctc 3240
aaaatgttct ttacgtatcc attggatatt atcaacgggt gstatatccag tgatttttt 3300
ctccatTTTA gtttccttag ctOctgaaaa tctcgataac tcaaaaaata cgcccggtag 3360
tgatcttatt tcattatggt gaaagttgga acctcttacg tgccgatcaa cgtctcattt 3420
tgcggaaatt aattaaggcg cgccgctctc ctggcttaga gtcacgtaga aaggactacc 3480
gacgaaggaa ctgggtcgc cggtgtgttc gstatatggag gtagtaagac ctccctttac 3540
aacctaaggc gaggaaactgc cttgtctatt ccacaatgtc gtcttacacc attgagtcgt 3600
ctcccctttg gaatggcccc tggaccggc ccacaacctg gcccgtcaag ggagtccatt 3660
gtctgttatt tcatggtctt ttacaaaact catatattt ctgagggtttt gaaggatgcg 3720
attaaggacc ttgttatgac aaagccccgtc ctcacctgca atatcagggt gactgtgtgc 3780
agctttgacg atggagtaga ttgcctccc tggttccac ctatggtggaa aggggctgcc 3840
gcccgggggtg atgacggaga tgacggagat gaaggagggtg atggagatga gggtgaggaa 3900
ggcaggagt gatgtactt gtagggagac gcccctcaatc gtattaaaag ccgtgtattt 3960
ccccgacta aagaataaat ccccaactgata catcatcggt gctgttggtg tatttctggc 4020
catctgtctt gtcaccattt tcgtccccc aacatgggc aattgggcatt acccatgtt 4080
tcacgtcaact cagctccgcg ctcacacact ttcgtgtt gaaaacattt ggcacattt 4140
cctggtgagc aatcagacat ggcacggctt tagcctggcc tccttaattt cacctaagaa 4200
tgggagcaac cagcatgcag gaaaaggaca agcagcgaaa attcacgccc cttgggagg 4260
tggcggcata tgcaaggat agcactccca ctctactact gggtatcata tgctgactgt 4320
atatgcata ggtatgcata tgctaccgg atacagatta ggatagcata tactaccag 4380
atatagatta ggtatgcata tgctaccgg atatagatta ggatagcata tgctaccag 4440
atataaatta ggtatgcata tactaccgg atatagatta ggatagcata tgctaccag 4500
atatagatta ggtatgcata tgctaccgg atatagatta ggatagcata tgctaccag 4560
atatagatta ggtatgcata tgctatccgg atatgggtt agtatatgtt acccagatat 4620
aaattaggat agcatatact accctaattt ctattaggat agcatatgtt acccggatatac 4680
agattaggat agcatatact acccagatattt agattaggat agcatatgtt acccagatat 4740
agattaggat agcctatgtt acccagatattt aaattaggat agcatataact acccagatat 4800
agattaggat agcatatgtt acccagatattt agattaggat agctatgtt acccagatat 4860
agattaggat agcatatgtt atccagatattt ttgggttagt tatgttaccc atggcaacat 4920
tagcccaccc tgctctcagc gacctcgta atatgaggac caacaaccct gtgttggcg 4980
ctcaggcgca agtgtgtgtt atttgtccctc cagatcgacg caatcgccccc cctatcttgg 5040
cccgccccacc tacttatgca ggttattcccc ggggtccat tagtggtttt gtgggcaagt 5100
ggtttgaccg cagtggttag cgggggttaca atcagccaag ttattacacc ttatTTTAC 5160
agtccaaaac cgcaggccgg cgtgtggggg ctgacgcgtg ccccaactcc acaatttcaa 5220
aaaaaaagagt ggccacttgt cttgtttat gggcccccatt ggctgtggagc cccgtttat 5280
tttcgggggtt gtttagagaca accagtggag tccgtgtctg tggcgttca ctctctttcc 5340
ccttggtaca aatagagtgt aacaacatgg ttcacccgtc ttggtccctg cctggacac 5400
atcttaataa ccccaacttccatc atattgcact aggattatgt gttgcccata gccataaatt 5460
cgtgtgagat ggacatccag tcttacggc ttgtcccccac cccatggatt tctattgtta 5520
aagatattca gaatgttca ttctactact agtattttt gccaaggggg ttgtgagg 5580
ttatattgggt gtcatagcac aatgccacca ctgaaccccc cgtccaaattt ttattctggg 5640
ggcgtcaccc taaacccctgt tttcgagcac ctcacataca ccttactgtt cacaactcag 5700
cagttattctt attagctaaa cgaaggagaa tgaagaagca ggcgaagatt caggagagtt 5760
cactgcccgc tccttgatct tcagccactg cccttgatc taaaatgggtt cactaccctc 5820

ccggagagcg tcgaagcggg ggccgtgttc gccgagatcg gcccgcgcac ggccgagttg 9300
 agcggttccc ggctggccgc gcagcaacag atggaaaggcc tcctggcgcc gcaccgggcc 9360
 caaggagccc gcgtggttcc ttggccacc gtcggggtc ttccggcgc caccaggcca 9420
 agggtctggc aagegcgtc gtgtccccg gagtggaggc ggccgagcgc gcccgggtgc 9480
 ccgccttcct ggagacccgc ggcgcggca acctccctt ctacgagcgg ctggcgttca 9540
 ccgtcaccgc cgacgtcgag gtggccgaag gaccgcgcac ctgtgtcatg acccgcaagc 9600
 ccggtgccctg acgcccggcc cacgaccgcg agcgcggc acgaaaggaga gcacgacccc 9660
 atgcatcgat ggcaactggc aggttaagtt caaggttagc ggccgctaac ctgggtgtg 9720
 actaattgag atgcatgtt tgcataacttc tgcctgtgg ggagcctggg gactttccac 9780
 accctaactg acacacattc cacagctggt tcttccgca tcagaaggta cacaggcga 9840
 attgttaagcg ttaatattt gttaaaattt gctttaaattt ttgttaaat cagtcattt 9900
 tttaaccaat aggccgaaat cggcaaaatc ccttataaaat caaaagaata gaccgagata 9960
 gggttgagtg ttgttcagt ttggacaag agtccactat taaaacgt ggactccaac 10020
 gtcaaaggc gaaaaaccgt ctatcaggc gatggcccac 10060

<210> 26
 <211> 7714
 <212> DNA
 <213> Homo sapiens

<400> 26
 tcaacgcacag gagcacgatc atgcgcaccc gtggccagga cccaaacgctg cccgagatgc 60
 gcccgcgtcg gctgtggag atggcgacg cgatggatat gttctgcacaa gggttggttt 120
 ggcattcac agtictccgc aagaattgtat tggctccaat tcttggagtgt gtgaatccgt 180
 tagcgaggtg ccgcggctt ccattcagggt cgagggtggcc cggctccatg caccgcgacg 240
 caacgcgggg aggccagacaa ggtatagggc ggcgcctaca atccatgcac acccggttca 300
 tttgtctcgcc gagggcgcat aaatcggctt gacgatcagc ggtccagtgtc tcgaagttag 360
 gctgttaaga gcccgcgcg acctttgtt gttgtgtcat ctacctgtt 420
 ggacagcatg gctgcacacg cggcatccc gatggcccg gaagcggaaa gaatcataat 480
 ggggaaggcc atccagccgc gctgcgcgaa cggcagaaacg acgtagccca gcccgtcgcc 540
 ccccatgcgcg gcgataatgg cctgttctc ggcggaaacgt ttgggtggccg gaccagtgc 600
 gaaggcttgc gcgaggcggt gcaagattcc gaataccgcg aagcgcaggc cgatcategt 660
 cgcgcgtccag cggaaacgcgtt cctcgccgaa aatgaccag aagcgtcgcc gcacactgtcc 720
 tacgagttgc atgataaaaga agacagtcat aagtgcggcg acgatagtca tgccccgcgc 780
 ccacccggaaag gagctgactg gtttgcggc tctcaaggcc atcggtcgac gctctccctt 840
 atgcgactcc tgcatttaga agcagcccg tagtagttt gggccgttgc gcacccgcgc 900
 cgcacggaaat ggtgcacgtca aggagatggc gcccacacgt ccccccggcca cggggctgc 960
 caccataccgc acggccaaac aagcgctcat gagcccgaaag tggcgagccc gatcttcccc 1020
 atcggtgtat tggcgatat aggccgcgcg aaccgcaccc tggcgccgg tgatgcgcgc 1080
 cacgatgcgtt cggcgataga ggttgcacccg gacgggtgt gtcgcacatg tcgcgtatgc 1140
 gatagtggct ccaagtgcgcg aagcgacgcg gactggccgg cggccaaacgc ggtcgacag 1200
 tgcgtccgaga acgggtgcgc atagaaattt catcaacgcg tatacgcttgc gcagcactgc 1260
 atagtgcactg gcgatgtgtt cggatggac gatatcccgc aagaggcccg cagatccgg 1320
 cataaccaag cctatgccta cagcatcccg ggtgacgggtt cggaggatgc cgatgagcgc 1380
 attgttagat ttcatcacgc gtgcctgact gctgttagcaaa tttaactgtt ataaactacc 1440
 gcattaaaggc ttatcgattt ccacacatta tacgagccgat tggcgatgtt caacagctca 1500
 tgcgtacgtt cccgggagca gacaaggccc tggcgccgc tggcgccgg tggcgccgg 1560
 tcggggctgg cttaactatg cggcatcaga gcaagatgtt ctgagatgtc accatatgcg 1620
 gtgtgaaata cggcacagat gctgttggg aaggccgc ggtgcggcc tcttcgttat tacgcccacgt 1680
 caggctgcgc aactgttggg aaggccgc ggtgcggcc tcttcgttat tacgcccacgt 1740
 ggcgaaagggg ggtgtgtgc caaggccgat aagtgggtt acggccagggtt tttcccaactc 1800
 acgacgttgtt aaaaacgcgg ccagtgtt ccgtctata ctgcgtatgc gataacagg 1860
 gtaatgcgtt agcggccgcgca atcgctctt taaggtgttcc cgtgtgtgc aacagctt 1920
 atgggttattt tgggtggccctt ctagaaatgc tggcgatgtt atgggtcatag ctgtttctg 1980
 tggtaatgc ttagccgtt cacaattccac acaacatcgc agccggaaagc ataaagtgtt 2040
 aaggccgtggg tgcgtatgc gtcgtatgc tgcgtatgc tgcgtatgc 2100

ctttccagtc gggaaacctg tcgtgccagc tgcattaatg acccgcgagg tcgccccccc 2160
gtaaccccct accgctgaaa gttctgcaaa gcctgatggg acataagtcc atcagttcaa 2220
cggaaagtcta cacgaagggtt tttgcgctgg atgtggctgc ccggcacccgg gtgcagttg 2280
cgatgccgga gtctgatgcg gtgcgatgc tgaaacaatt atcctgagaa taaatgcctt 2340
ggcctttata tggaaatgtg gaactgagtg gatatgtgt ttttgtctgt taaacagaga 2400
agctggctgt tatccactga gaagcgaacg aaacagtccg gaaaatctcc cattatcgta 2460
gagatccgca ttattaatct caggagcctg tgtagcgtt ataggaagta gtgtctgtc 2520
atgatgcctg caagcgtaa cgaaaaacgtt ttgaatatgc cttcaggaac aatagaaatc 2580
ttcgtgcggt gttacgttga agtggagcgg attatgtcag caatggacag aacaacctaa 2640
tgaacacaga accatgatgt ggtctgtcct ttacagcca gtatgtctcg ccgcagtcga 2700
gcgacaggcga gaagccctcg agtgagcgg gaagcaccag ggaacagcac ttatatattc 2760
tgcttacaca cgatgcctga aaaaacttcc cttggggta tccacttatac caggggata 2820
ttttataat tattttttt atagttttt gatcttctt ttagagcgc cttgttaggc 2880
tttatccatg ctgggtctag agaagggtgtt gtgacaaaatt gcctttcag tggacaaaat 2940
caccctcaaa tgacagtcc tgcgtgtaca aattgcctt aaccctgtga caaattgccc 3000
tcagaagaag ctgtttttt acaaagttat ccctgtttat tgactctttt ttatattgt 3060
tgacaatcta aaaacttgc acacttcaca tggatctgtc atggcgaaaa cagcggttat 3120
caatcacaag aaacgtaaaa atagcccgcg aatcgccatc tcaaacgcacc tcactgaggc 3180
ggcatatagt ctctcccggg atcaaaaacg tatgtgtat ctgttcgtt accagatcag 3240
aaaatctgtat ggcaccctac aggaacatga cggtatctgc gagatccatg ttgctaaata 3300
tgctgaaata ttccgattga cctctgcggg agccagtaag gatatacgac aggcattgaa 3360
gagtttcgac gggagaag tggtttttt tcgcctgaa gaggatccg gcatgaaaa 3420
agctatgaa tctttccctt ggttatcaa acgtgcgcac agtccatcca gagggctta 3480
cagtgtacat atcaacccat atctcattcc cttcttatac gggttacaga accggttac 3540
gcagtttcgg cttagtggaa caaaagaaat caccatccg tatgcctatgc gtttatacga 3600
atccctgtgt cagtagtgcg agccggatgg ctcaggatc gtctctctga aaatcgactg 3660
gatcatagag cgttaccgc tgcctcaaaat ttaccagggt atgcctgact tccgcgcgc 3720
cttcctgcag gtctgtgttta atagatcaca cagcagaact ccaatgcgc tctcatacat 3780
tgagaaaaag aaaggccgc agacgactca tatgtattt tccctccgcg atatcacttc 3840
catgacgaca ggtatgtctg agggttatct gtcacagatt tgagggtgt tcgtcacatt 3900
tggctgcacc tactgagggtt aatttgcac agtttgcgt ttccttcag cttgcattga 3960
ttttctcata ctttttgcac tgaattttt aaggaagcca aatttgcaggc cagttgtca 4020
cagttgattt cttctcttt ccctctgc tgcacttgc tatcgggggtagttc 4080
tcattgtga gggttgatta tcacagttt ttaactctgaa ttggctatcc gctgtgttac 4140
ctctacctgg agttttccccc acgggtggata tttcttcctt cgttgcgtt aagagctatc 4200
tgacagaaca gttcttcattt gttccctcgc cagttgcgtc gctatgtcg gttacacggc 4260
tgcggcgacg gctagtgata ataagtgtact gaggtatgtc ctcttcattt ctctttgt 4320
agtgttgcgc ttattttaaa caactttgcg gttttttgt gactttgcgat tttttgtgtt 4380
gccttgcagt aaattgcaag attaataaaa aaaacgcggaa gcaatgatta aaggatgttc 4440
agaatgaaac tcatggaaac acttaaccag tgcataaaacg ctgggtcatga aatgacgaaag 4500
gctatcgcca ttgcacagtt taatgtgac agcccgaaag cgaggaaaaat aaccggcgc 4560
tggagaatag gtgaagcgc ggttttagtt ggggtttctt ctcaggctat cagagatgcc 4620
gagaaaggcag ggcgactacc gcacccggat atggaaattt gaggacgggt tgagcaacgt 4680
gttgggtata caattgaaca attaataatcat atgcgtgtat tttttgttac gcatgtcg 4740
cgtgtgtac agtatttcc accgggtgtc ggggttgcgtt ccataaaagg tggcgatgt 4800
aaaacctcag tttctgtca tttctgc tgcacttgc tgaaggggct acgtgttttgc 4860
ctcgtggaaag gtaacgaccc ccaggaaaca gcctcaatgt atcactggat ggtaccagat 4920
cttcataattc atgcagaaga cactctcctt cttttctatc ttggggaaaa ggacgtgtc 4980
acttatgcaaa taaagccac ttgcgtggcgg gggcttgaca ttattccattt ctgtctggct 5040
ctgcaccgtt tggaaactga gtaatgggc aaatttgcgtt aaggtaaact gccaccgt 5100
ccacacccgtt tgcctccactt ggcatttgcg actgttgcgtc atgactatgc tgcataatgtt 5160
attgacagcg cgcctaaacctt gggatcgcc acgatataatgc tgcgtatgtc tgcgtatgt 5220
ctgattgttc ccacgcctgc tggatgtttt gactacaccc tccgcactgc gtttttcgt 5280
atgcgttgcgtt atctgttcaaa gaaatgttgc tttttttttt tttttttttt tttttttttt 5340
ttgcgttacca aatacagcaaa tagtaatggc tctcgtccc cgtggatggc ggagcaattt 5400
cgggatgcctt gggaaagcat gttctaaaaa aatgttgcgtt gtaatggc gttttttttt 5460
aaaggcgttcaacttccatc tccggatgtt gactgtttt gaaatggc tttttttttt 5520

ggtgcctgga gaaatgcctt ttctattttgg gaacctgtct gcaatgaaaat tttcgatcgt 5580
 ctgattaaac cacgctggga gattagataa tgaagcggtc gcctgttatt caaaaacata 5640
 cgctcaatac tcaaccgggtt gaagataactt cgttatcgac accagctgcc ccgatgggtgg 5700
 attcgtaat tgccgcgtta ggagtaatgg ctgcggtaa tgcattact ttgcctgtat 5760
 gtggtcggga tgtgaagttt actcttgaag tgctccgggg tgatagtgtt gagaagacct 5820
 ctccggatgt gtcaggtaat gaacgtgacc aggagctgt tactgaggac gcactggatg 5880
 atctcatccc ttctttcta ctgactggtc aacagacacc ggcgttcggc cgaagagtat 5940
 ctgggtgtcat agaaaattgcc gatggggatc gccgtcgtaa agctgctgca cttaccgaaa 6000
 gtgattatcg tgggtcggtt ggcgagctgg atgatgagca gatggctgca ttatccagat 6060
 tggtaacga ttatcgccca acaagtgtt atgaacgtgg tcagcgttat gcaagccat 6120
 tgcagaatga atttgctgga aatatttctg cgctggctga tgccggaaaat atttcacgta 6180
 agattattac cgcgtgtatc aacaccggcca aattgcctaa atcagttgtt gctcttttt 6240
 ctcacccccc tgaactatct gcccggtcag gtgatgcact tcaaaaagcc tttacagata 6300
 aagaggaatt acttaagcag caggcatcta accttcatga gcagaaaaaaa gctgggggtga 6360
 tatttgaagc tgaagaagtt atcaactctt taacttctgt gctaaaaacg tcatactgcat 6420
 caagaacttag tttaagctca cgacatcagt ttgcctctgg agcgacagta ttgtataagg 6480
 gcgataaaaat ggtgcttaac ctggacaggt ctcgtgttcc aactgaggtt atagagaaaa 6540
 ttgaggccat tcttaaggaa ctggaaaagc cagcacccctg atgcgaccac gtttttagtct 6600
 acgtttatct gtctttactt aatgtctttt gttacaggcc agaaaagcata actggcctga 6660
 atattctctc tggggccagaa gcttggccca ctgttccact tgcgtatcg tgcgtataat 6720
 cagactggga ccacgggtccc actcgtatcg tcgggtctgat tatttagtctg ggaccacgg 6780
 cccactcgta tcgtcggtct gattattagt ctgggaccac ggtccccactc gtatcgctgg 6840
 tctgataatc agactgggac cacgggtccc ctgcgtatcg tgggtctgatt attagtctgg 6900
 gaccatggtc ccactcgat cgtcggtctg attattagtc tgggaccacg gtcggactcg 6960
 tatacgctgg tctgattatta gtctggaaacc acgggtccac tcgtatcgat ggtctgatta 7020
 ttagtctggg accacggtcc cactcgatc gtctggatcg ttatttagtct gggaccacga 7080
 tcccactcgat gttgtcggtc tgattatcgat tctgggaccac ggtccccactc tgcgtatcg 7140
 atcagactat cagcgtgaga ctacgatcc atcaatgcct gtcaaggggca agtattgaca 7200
 tgcgtcgat acctgttagaa cggagtaacc tcgggtgtcg gttgtatgcc tgctgtggat 7260
 tgcgtcgatc tcctgcttat ccacaacatt ttgcgcacgg ttatgtggac aaaatacctg 7320
 cgtagagaaa aagagttgt agaaacgcacaa aaaggccatc cgtcaggatg gccttctgct 7380
 taatttgatg cctggcagtt tatggggggc gtccctggccg ccacccctccg ggccgttgct 7440
 tcgcaacgat ccaaattccgtt ccggggggat ttgtcttact caggagagcg ttcaccgaca 7500
 aacaacagat aaaacgaaaag gcccagtctt tcgactgagc ctttcgtttt atttgatgcc 7560
 tggcagttcc ctactctcgat atggggagac cccacactac catcgccgtc acggcggttc 7620
 acttctgagt tcggcatggg gtcaggtggg accaccgcgc tactgcccggc aggcaaatc 7680
 tggtttatca gaccggttcc gcggttctggg ccgc 7714

<210> 27
 <211> 5314
 <212> DNA
 <213> Homo sapiens

<400> 27
 gatcttcaat attggccatt agccatatta ttcatgggtt atatagcata aatcaatatt 60
 ggctattggc cattgcatac gttgtatcta tattcataata tgcatttttatttgcgtca 120
 tgcattatcatt gaccggccatg ttggcattga ttattgtacta gtttataata gtaatcaatt 180
 acgggggtcat tagttcatag cccatataatg gagttccgcg ttacataact tacggtaaat 240
 ggccccgcgt gctgaccgccc caacgacccc cggccattga cgtcaataat gacgtatgtt 300
 cccatagtaa cgccaaatagg gactttccat tgacgtcaat ggggtggagta tttacgtaa 360
 actgcccact tggcagttaca tcaagtgtat catatgccaat gtccggccccc tattgacgtc 420
 aatgacggta aatggcccgc ctggcattat gcccagttaca tgaccttacg ggactttcct 480
 acttggcagt acatctacgt attagtcatc gctattacca tgggtatgcc gttttggcag 540
 tacaccaatg ggcgtggata gcggtttgac tcacggggat ttccaagtctt ccacccatt 600
 gacgtcaatg ggagttgtt ttggcaccata aatcaacggg actttccaaa atgtcgtaac 660
 aacttgcgtatc gccccccccccg ttgacgtcaaa tggggcggtt ggcgtgtacgg tggggaggatct 720

accgctatca	ggacatacgcg	ttggctaccc	gtgatattgc	tgaagagctt	ggcggcgaat	4200
gggcgtgaccg	cttcctcggt	cttacggta	tcggcgctcc	cgattcgcg	cgcacatcgct	4260
tctatcgccc	tcttgacgag	ccattctgt	ggatggctac	aggtegcgcag	cctggcgctcg	4320
tgatttagtga	tgtatgaacca	ggttatgacc	ttgattttat	ttgcatacct	aatcatattg	4380
ctggaggattt	ggaaagggtg	tttattccctc	atggactaat	tatggacagg	actgaacgtc	4440
ttgctcgaga	tgtgtatgaag	gagatgggag	gccatcacat	tgtagccctc	tgtgtgctca	4500
aggggggcta	taaattctt	gctgacctgc	tggattacat	caaagcactg	aatagaaaata	4560
gtgatagatc	cattcctatg	actgttagatt	ttatcagact	gaagagctat	tgtaatgacc	4620
agtcaaacagg	ggacataaaaa	gtaattggtg	gagatgatct	ctcaacttta	actggaaaga	4680
atgtcttgc	tgtggaaagat	ataattgaca	ctggcaaaac	aatgcagact	ttgcttcct	4740
tggtcaggca	gtataatcca	aagatggtca	aggtegcgaag	cttgcgtggtg	aaaaggaccc	4800
cacgaagtgt	tggatataag	ccagactttg	ttggatttga	aattccagac	aagtttgtt	4860
taggatatgc	ccttgactat	aatgaatact	tcagggattt	gaatcatgtt	tgtgtcatta	4920
gtgaaaactgg	aaaagcaaaa	tacaaaggct	aagcggccgc	taacctgggtt	gctgactaat	4980
ttagatgc	gtttgcata	cttctgcctg	ctggggagcc	tggggacttt	ccacacccct	5040
actgacacac	attccacacg	tggttcttc	cgcctcagaa	ggtacacagg	cgaaattgt	5100
agcgtaata	ttttgttaaa	attcgcgtt	aattttgtt	aaatcagctc	attttttaac	5160
caataggccg	aaatcgccaa	aatcccttat	aaatcaaaaag	aatagaccga	gatagggtt	5220
agtgttgtc	cagtttgaa	caagagtcca	ctattaaaga	acgtggactc	caacgtcaaa	5280
ggcgaaaaaa	ccgtctatca	ggcgatggc	ccac			5314

<210> 28
<211> 9737
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (8347)
<223> a, c, t, g, other or unknown

<220>
<221> modified_base
<222> (8499)
<223> a, c, t, g, other or unknown

<400> 28
gatcttcaat attggccatt agccatatta ttcattggtt atatagcata aatcaatatt 60
ggctattggc cattgcatac gtttatcta tatcataata tgtacattt tattggctca 120
tgtccaaatat gaccgcattt ttggcattga ttattgacta gtttataata gtaataattt 180
acggggtcat tagttcatag cccatataatg gagttccgcg ttacataact tacggtaaat 240
ggcccgcctg gctgaccgccc caacgacccc cgccccattga cgtcaataat gacgtatgtt 300
cccatagtaa cgccaatagg gacattccat tgacgtcaat gggtgagta tttacgtaa 360
actgcccact tggcagtaca tcaagtgtat catatccaa gtccgcccc tattgacgtc 420
aatgacggta aatggcccg ctggcattat gcccagata tgaccttacg ggacttcct 480
acttggcagt acatctacgt attagtcatc gctattacca tggtgatgcg gttttggcag 540
tacaccaatg ggcgtggata gcgtttgac tcacggggat ttccaagtct ccacccatt 600
gacgtcaatg ggagttgtt ttggcaccaa aatcaacggg actttccaaa atgtcgtaac 660
aactgcgatc gcccgcggcc ttgacgcaaa tggcggtag gctgtacgg tggaggtct 720
atataagcg agctcgatc gtgaaccgtc agatcactga attctgacga cctactgatt 780
aacggccata gaggcctct gcagaactgt cttatgtaca actatcgatt tccacacatt 840
atacgagccg atgttaattt tcaacagctc atgcgtacg tcccgaggc agacaagccc 900
gaccatggct cgagtaatac gactcactat agggcgacag gtgagtaactc gctacctaa 960
ggcttatctg gccgtttaaa cagatgtgtta taagagacag ctctcttaag gtacgtgtc 1020
tcttatacac atctagatcc ttgttagtgcgtt cgaccaattc tcatgttga cagcttatca 1080
tcgcagatcc ttagtgcgtt tggcactc tcaatctgtt ctgtctgtt gccgcataat 1140

taagccagta	tctgctccct	gcttgtgtgt	tggaggtcgc	ttagtagtgc	gcgagcaaaa	1200
tttaagctac	aacaaggcaa	ggcttgaccg	acaattgcac	gaagaatctg	cttagggta	1260
ggcgtttgc	gctgcttcgc	gatgtacggg	ccagatatac	gcgtatctga	ggggacttagg	1320
gtgtgtttag	gcgcccageg	gggcttcggg	tgtacgcggg	taggagtccc	ctcaggatat	1380
agtagttcg	ctttgcata	gggagggggg	aatgtagtc	tatgcataac	acttgttagc	1440
ttgcaacatg	gtaacgatga	gttagcaaca	tgccttacaa	ggagagaaaa	agcaccgtgc	1500
atgccgattg	gtggaaagtaa	ggttgtacga	tcgtgcctt	ttaggaaggc	aacagacagg	1560
tctgacatgg	attggacgaa	ccactgaatt	ccgcattgca	gagataattg	tatthaagt	1620
cctagctcga	tacaataaaac	gccatttgac	cattcaccac	atttgtgtgc	acctccaagc	1680
tgggtaccag	ctgctagcct	cgagacgcgt	gatttccttc	gaagcttgc	atggttggtt	1740
cgttaaactg	catcgtcgct	gtgtcccaga	acatgggcat	cgccaagaac	ggggacctgc	1800
cctggccacc	gctcaggaat	gaattcagat	atttccagag	aatgaccaca	acctcttcag	1860
tagaaggtaa	acagaatctg	gtgatttatgg	gtaagaagac	ctggttctcc	attcctgaga	1920
agaatcgacc	tttaaagggt	agaattaatt	tagttctcag	cagagaactc	aaggaacctc	1980
cacaaggagc	tcattttctt	tccagaagtc	tagatgatgc	cttaaaaactt	actgaacaac	2040
cagaattagc	aaataaaagta	gacatggtct	ggatagttgg	tggcagttct	gtttataagg	2100
aagccatgaa	tcacccaggc	catcttaaac	tatttgcac	aaggatcatg	caagacttig	2160
aaagtgcac	gttttttcca	gaaatttgatt	tggagaaata	taaacttctg	ccagaatacc	2220
caggtgttct	ctctgatgtc	caggaggaga	aaggcattaa	gtacaaattt	gaagtatatg	2280
agaagaatgt	taattaaggg	caccaataac	tgccttaaaa	aaattacgac	ccgcctcgcc	2340
actcatacgca	gtactgttgt	aattcattaa	gcattctgcc	gacatggaaag	ccatcacaga	2400
cggcatgtat	aacctgaatc	gcccagggca	tcagcacctt	gtgccttgc	gtataatatt	2460
tgcccatgtt	gaaaacgggg	gccaagaagt	tgtccatatt	ggccacgttt	aaatcaaaac	2520
tggtgaact	caccaggga	ttggctgaga	cgaaaaacat	attctcaata	aaccctttag	2580
ggaaataggc	caggtttca	ccgtAACACG	ccacatcttgc	cgaatataatg	tgtagaaact	2640
gccccaaatc	gtcgtgttat	tcactccaga	gcatgaaaaa	cgtttcagtt	tgctcatgga	2700
aaacgggtgt	acaagggtga	acatatccc	atatcaccag	ctcaccgtct	ttcattgcca	2760
taacggattc	cggatgagca	ttaatcaggc	gggcaagaat	gtgataaaag	gccggataaa	2820
acttgtgtt	atttttctt	acggtttta	aaaaggccgt	aatatccagc	tgaacggct	2880
ggttataggt	acattgagca	actgactgaa	atgcctcaaa	atgttcttta	cgatgccatt	2940
gggatataatc	aacgggtgt	tatccagtgt	ttttttctc	catttttagct	tccttagctc	3000
ctgaaaatct	cgataactca	aaaaataacgc	ccggtagtga	tcttatttca	ttatggtaa	3060
agttggaaacc	tcttagtgc	cgatcaacgt	ctoatttcg	ccaaattaat	taaggcgccg	3120
cgcctctctg	gctaggagtc	acgtagaaaag	gactaccgac	gaaggaactt	gggtcgccgg	3180
tgtgttcgta	tatggaggt	gtaagacctc	ccttacaac	ctaaggcgag	gaactgcct	3240
tgttatttca	caatgtcgct	ttacaccatt	gagtcgtctc	ccctttggaa	tggcccttgg	3300
accggggcca	caacctggcc	cgctaaggga	gtccatttgc	tgttatttca	tgttctttt	3360
acaaaactcat	atatttgcgt	agggtttgaa	ggatgcgatt	aaggaccttgc	ttatgacaaa	3420
gccccgttct	acctgcaata	tcagggtgac	tgtgtgcagc	tttgacgatg	gagtagattt	3480
gcctccctgg	tttccaccta	tgggaaagg	ggctgcgcg	gagggtgtatg	acggagatga	3540
cggagatgaa	ggaggtgtatg	gagatgaggg	tggaaagg	caggagtatg	gtaacttgc	3600
aggagacgcc	ctcaatcgta	ttaaaagccg	tgtattttcc	cgactaaag	aataaatccc	3660
cagtagacat	catgcgtgt	gttgggttat	ttctggccat	ctgtcttgc	accattttcg	3720
tcctcccaac	atggggcaat	tggcataacc	catgttgtca	cgtcaactcag	ctcccgccgtc	3780
aacaccttct	cgcgttgaa	aacatttagcg	acatttacct	ggtgagcaat	cagacatgcg	3840
acggctttag	cctggccctcc	ttaaattcac	ctaagaatgg	gagaaccag	catgcaggaa	3900
aaggacaagc	agcgaaaatt	cacggccctt	tgggagggtgg	cgcatatgc	aaaggatagc	3960
actcccaact	tactactggg	tatcatatgc	tgactgtata	tgcatgagga	tagcatatgc	4020
tacccggata	cagatttaga	tagcatatac	tacccagata	tagatttaga	tagcatatgc	4080
tacccagata	tagatttaga	tagcctatgc	tacccagata	taaatttaga	tagcatatac	4140
tacccagata	tagatttaga	tagcatatgc	tacccagata	tagatttaga	tagcctatgc	4200
tacccagata	tagatttaga	tagcatatgc	tacccagata	tagatttaga	tagcatatgc	4260
tatccagata	tttgggtatg	atatgcattc	cagatataaa	ttaggatagc	atataactacc	4320
ctaattctca	ttaggatagc	atatgcattc	cgatatacaga	ttaggatagc	atataactacc	4380
cagatataga	ttaggatagc	atatgcattc	cagatataga	ttaggatagc	ctatgcattc	4440
cagatataaa	ttaggatagc	atataactacc	cagatataga	ttaggatagc	atatgcattc	4500
cagatataga	ttaggatagc	ctatgcattc	cagatataga	ttaggatagc	atatgcattc	4560


```

aaacgatect catcctgtct cttgatcaga gcttgatccc ctgcgccatc agatccttgg 8040
cgcgagaaa gccatccagt ttactttgca gggcttgcac acettaccag ataaaagtgc 8100
tcatcattgg aaaacattca atttgtcgac ctgcatttc tacceggtag gggaggcgct 8160
tttccaagg cagtctggag catgcgttt agcagccccg ctggcactt ggccgtacac 8220
aagtggcctc tggectcgca cacattccac atccacccgtt aggcccaac cggtccgtt 8280
cttgggtgc cccttcgcgc cacattctac tcctccctta gtccaggaaat tccccccgc 8340
cccgcantc gcgtcgca ggacgtgaca aatggaaata gcacgtctca ctatgtctgt 8400
gcagatggac aagcacccgt gagaatggaa gcccggtaggc ctttggggca gggccaaata 8460
gcagcttgc tccttcgtt tctgggtca gaggctggna aggggtgggt ccggggcg 8520
gctcaggggc gggctcaggg gggggggggg cgcccgaaagg tcctccggag gcccggcatt 8580
ctgcacgctt caaaagcgca cgtctgcgcg gctgttctcc tcttcctcat ctccgggcct 8640
ttcgacctgc atccatctag atctcgagca gctgaagctt accatgaccg agtacaagcc 8700
cacgggtgcgc ctcgcccaccc ggcacgacgt ccccccggcc gtacgcaccc tcgcccgcgc 8760
gttcgcgcac taccggccca cgcgcacac cgtcgaccccg gaccgcacca tcgagcgggt 8820
caccgagctg caagaactct tcctcacgcg cgtcggtctc gacatcgac aggtgtgggt 8880
cgccggacgac ggcgcggggg tgccgggtctg gaccacccgg gagagcgctg aagcgggggc 8940
ggtgttcgcg gagatcgccg cgcgcacggc cgggttgcg ggttcccgcc tggccgcgc 9000
gcaacagatg gaaggccctt tggccgcgc cccggcccaa ggagcccgcc tggttccttgc 9060
gcccacccgtc gggcgcttcc gcccggccac caggggcaagg gtcggcaag cgcgcgtcg 9120
ctccccggag tggaggcgcc cggcgccgc ggggtggcccg ctttccttgc gacatcgac 9180
ccccgcaccc tcccttcgtt cggcgccgc ggttccaccc tcaccgcgc cgtcgaggtg 9240
cccgaaaggac cgcgcacccgt gtgcacccgt cgcaccccg gtgcctgcgc cccgcaccc 9300
gaccggcagc gcccggccaa aaggagcgca cggccatcg catcgatggc actgggcagg 9360
taagtatcaa ggttagcgcc cgttaaacctg gttgctgact aatttggatg catgcttgc 9420
atacttctgc ctgctggggc gcctggggac ttccacacc ctaactgaca cacatccac 9480
agctggttct ttccgcctca gaaggtacac aggcgaaatt gtaagcgta atatttgtt 9540
aaaatttcgcg ttaaatttt gtaaatcgtt ctcattttt aaccaatagg ccgaaatcg 9600
caaaatccct tataatcaa aagaatagac cggataggg ttgagtgttgc ttccagtttgc 9660
gaacaagagt ccactattaa agaacgtgga ctccaaacgtc aaaggcgaa aaaccgtcta 9720
tcagggcgat gggccac 9737

```

```

<210> 29
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Vector
Promoter

<400> 29
acccaggtga tg 12

<210> 30
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Vector
Promoter

<400> 30
accatgcagg tgatg 15

```

<210> 31
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Vector Promoter

<400> 31
accatggcag gtgatg 16

<210> 32
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Vector Promoter

<400> 32
accatggca ggtgatg 17

<210> 33
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Vector

<220>
<223> polyA tail

<400> 33
aaaaaaaaaa 10